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TRANSACTIONS

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ESSEX

AGRICULTURAL SOCIETY,

FOR

1839.

VOL. II.—No. IX.

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ADDRESS

BEFORE THE

ESSEX AGRICULTURAL SOCIETY,

AT

GEORGETOWN,

SEPTEMBER 26, 1839.

BY

ALLEN PUTNAM,

OF DANVERS.

SALEM POWER PRESS.

PRINTED AT THE GAZETTE OFFICE.

1840.

ADDRESS.

Mr. President and Gentlemen:

I would gladly have been excused from attempting to bring a contribution to the exhibitions of your Society, until such a time as I could offer something that was nearly ripened. There are, no doubt, matured grains and delicious fruits, in the field in which I am honored with the privilege of gathering; but having an unpractised eye, every thing there seems to me unripe and unfit to set before this company. How can it be otherwise? Only a little more than two years ago, these hands had had no acquaintance with the plough and the scythe since the days of my boyhood. Up to the present hour, I have never cultivated a rood of land that belonged to myself, or in the productions of which I had any direct pecuniary interest.

Broken down in health by the confinement and exhausting excitements of professional labors, the quiet and the employments of the paternal farm were resorted to as the most skilful physicians and efficient

restoratives. There, where I have been little else than a mere laborer in carrying forward the operations upon the farm, and that too in the short term of less than three years, have I received nearly all my available schooling in the science and art of husbandry. The situation has afforded neither inducements to make such minutes, nor opportunity to try such experiments, as enable me to address an assembly of experienced farmers, in a manner that will be satisfactory to myself, or instructive to those who hear me.

Though well aware that assertions, without something like proof of their correctness; that theories unsupported by experiments; that second or third hand statements of facts are far from being what the occasion demands, yet I am obliged to tell you what I *think*, rather than what I *know*; to give details of my conjectures, rather than the results of experience and extensive observation.

The lessons, which experience is supposed to give where I have labored and observed, are not, perhaps, in all their parts such as she teaches in other portions of the county. The crops and methods of cultivation, which are most productive on one farm, may be unsuited to other lands. Therefore, you and I, probably, do not think and judge precisely alike. My views will be deemed erroneous. Be it so; suspect me, if you please, even of ignorance, partial observation, and visionary theorising. I'll bid the suspicion a cordial welcome, if by raising it, I can furnish you with a single fact or suggestion that may be turned to some good account. Cautioning you not to

adopt my opinions any farther than they are approved by your own good sense and experience, I venture to notice, somewhat minutely, several of our common crops and operations.

Indian corn is one of the most important productions of our soil and skill. What varieties shall be cultivated? The early or the late?—The cold and frosts of '36 and '37 aroused almost every agricultural pen in recommendation of the early kinds; the tongues of Commissioner and address-makers were eloquent in their praise; and farmers generally became anxious to procure them for cultivation. The arguments of the many pens, the power of eloquence, and the more persuasive language of the prudent farmer's actions, could never, in my judgment, stand before a simple and unimposing array of facts and figures. During more than half a century the later corns have not failed, in more than three seasons, to come to maturity in my ancestral fields. These varieties, I should judge, generally yield at least twenty-five per cent more of both grain and stalks, than the early kind. A very simple arithmetical process brings me to the conclusion, that there is little wisdom in abandoning the cultivation of the more productive varieties. It was a maxim with one, now deceased, who ranked among the best cultivators in my native parish, that he would rather have a crop of larger corn every other year, and a larger growth of stalks and green corn the intervening years, than an annual crop of small stuff. This maxim, in its spirit, if not in the letter, is perfectly sound. I have facts that seem to prove it. In 1837, when the corn was bad-

ly injured by frosts, I found by no negligent, if not by the most careful measurement of the crop upon one acre and ten poles of land planted with large and late corn, that it amounted to thirty-five bushels that was quite well ripened, and thirty-six or seven frost-bitten and green; nearly half of the latter kind, however, dried sufficiently well to grind upon the cob and make tolerable food for cattle and swine. There were upon the farms earlier corns ripening well, and yet yielding a less valuable crop than the one described. This, let me be understood to say, was in the most unfavorable season, with two, or at most, three exceptions, of the last fifty years. If in such a year the late corns make any thing like a near approach in value, to the early ones, they must be decidedly the most profitable in the average of a succession of seasons. Making all the deductions which can be reasonably demanded for the greater exhaustion of the soil, and for a supposition that the early varieties with which I am acquainted are less productive than others that might be found, the position, in my mind, can and must be still maintained, that on all our good lands that are not cold and peculiarly subject to frosts, and where we intend to manure well and take proper care of our land, it is unwise to give up the productive for the early corns.

Which among the early, and which among the late varieties are best? I am but poorly qualified to answer the question. Can only say generally, that the dimensions of the kernel, particularly in depth, are worthy of much regard. The Dutton, in all its varieties, is no favorite with me. Its bright and sound

appearance, the length and fulness of the ear, and its twelve rows recommend it to the eye, and it tells up well in the basket; but there is another measure — in the *half bushel* it is found *wanting;* the cob heap takes too large a share. The eight-rowed corns, of the largest kernel that will mature in our climate, are to be preferred. One of this description, under good cultivation, has not failed with us, in any one of the last six years, to give a growth of at least sixty bushels to the acre, and has gone as high as ninety-five. The proper name of this is not known, but in all respects, excepting color, it is like a variety of the Parker corn which I have seen. The Touscarora has been considered as a garden corn merely. But the luxuriant growth of a small patch of it last year, led to a belief that it might be found profitable in the field; and I am anticipating a favorable result of an experiment with it. Here is a kernel that yields flour scarcely inferior in whiteness, softness, and flavor to the Genesee; and by the side of which the kernel of most of our corns is but a pigmy. I doubt not that on warm and good soils it will stand nearly at the head of corns in productiveness. Accounts are coming to us of a corn called the "Brown," which in the high latitude of N. Hampshire is made to yield an hundred, an hundred and thirty-six, even an hundred and forty-seven bushels to the acre. Doing so well at the north of us, I hope that some of our farmers will be induced to see how it will thrive in our Essex soil.

Seed sometimes fails to germinate; worms and birds often make sad havoc in our fields. To guard

against loss from these causes it is well to plant twice as many kernels in the hill as we wish to have stalks. There is a slight direct advantage in this. For the young plants, I know not why, grow faster for a few weeks in thick bunches, than when distant from each other. This method also enables you to dispense with all the sickly and unpromising plants, and retain a full supply of such only as are healthy and vigorous. The increase of product will amply compensate for the extra seed and labor of thinning.

Much has been written in praise of the famous Baden corn, yielding four and five ears to the stalk. We have been advised to select our seed from stalks bearing two ears, and thus make for ourselves a New England Baden. But I question the prudence of hearkening to the advice. Last Spring a gentleman in Boston sent me three beautiful ears of corn, long, bright and sound; with a request to have them planted where they might have a good chance to show what they could do. The request was complied with. Subsequently I learned that they had been obtained by Badenizing a Canada corn, and that I might expect to obtain three and four good ears to the stalk. The ears are, I must acknowledge, uncommonly numerous, but very many of them are but small things, and I shall be disappointed, if I find there as much good sound corn as would be obtained from five good stalks in a hill, bearing each one ear. I have for a considerable time thought that Baden's process would do little else than increase the pile of nubbins, or diminish the mow of stalks. This is

merely an individual opinion, and is given without a desire that it should deter any one from making experiments.

I have some theories or whims to state, relating to our treatment of the growing corn. Both air and light are thought to be serviceable to its roots; if so, it is a part of our business to keep the windows, above them, open. You have all noticed that rains and dews very soon form a slight crust upon the surface of our land in tillage. When this is formed, even but partially, it obstructs, somewhat, the passage of both air and light. In the short space of four or five days, be the weather ever so fair, the surface of the ground we stir, will become very considerably less pervious; passage ways should again be opened. But we cannot spend all our time among the corn. What then is our best mode of procedure? These subtile agents, if once admitted below the surface-crust, will move obliquely to a considerable distance; so that merely passing between the rows one way with the cultivator, may be sufficient for furnishing a temporary supply of light and air *to all the roots.* If so, the labor of passing through the other way should be deferred for a few days; then after an interval of a few more days use the hoe. At the proper time, repeat the process. For thus, with an equal amount of labor, applied on nine different days at intervals of four or six days, your crop, if my theory is sound, will be considerably more benefited, than if the labor be all performed on three days, at intervals of a fortnight or more.

It is presumed that stirring the surface of the earth until later in the season than is usual with our farmers would hasten the maturity and increase the quantity of our crops. I should confidently expect advantage from it up to the time when the corn becomes full. I speak of stirring the *surface*; and I mark the word as emphatic. Two years ago when thinning corn that was not more than six or eight inches high, I accidentally drew out the root of one stalk, that, upon measurement, was found to be twenty inches long. Afterwards, by pulling with care, roots much longer than I supposed that little corn possessed, were drawn out from many hills. Subsequent observation has confirmed the belief that the minute but important roots of our corn spread widely through the ground and that many of them lie near its surface. It is hardly necessary to assert that it is important to spare the roots of our growing plants. However minute they may be, the plant will suffer from a loss of them. The practice of ploughing deep between the rows, and making a high hill around the corn must sever many of these roots, and lay the mass of them unnaturally deep in the earth. Corn thus treated is placed at disadvantage. There is no benefit whatever derived from making *any hill*. I have taken pains the present year to go through many fields, and notice the effect of every grade, from the level surface to the high hill, and I find no reason to think that the corn either grows better, or stands better, for being hilled. In times of drought, the level surface will longer supply the corn with moisture, and will convey the rain, when it comes,

more directly and abundantly to the thirsting roots. My conviction, that the surface of the ground alone should be stirred, leads me to refer to the instruments of cultivation. The plough is fast giving place to the cultivator. This exchange may be advantageous. But I am not satisfied that it is the best exchange that might be made. The form of the cultivator teeth does not suit me; it carries them too deep; they rend the roots of the corn too much. Many months ago, the query arose in my mind whether the size of crops which I had witnessed, was not augmented by the use of a *harrow* in the cultivation. Since that time I have noticed with care such accounts as have come to me of large crops, and have been surprised to find that in most of the instances in which a very extraordinary yield had been obtained, the corn was *harrowed*. I throw out these opinions in the hope that some one will be induced to bring my theory to the test of experience, and ascertain by some careful experiment the soundness or unsoundness of my conclusion.

One other topic in relation to this crop, demands a passing notice. If any faith can be placed in the testimony of those who have endeavored to ascertain the exact effects of taking the top of the stalk from the growing, or rather ripening corn, the farmers of Essex are not accustomed to pursue the best course. Experiment is said to teach, that when the corn, as soon as it has become a little hardened, is cut up at the root and shocked, the yield is greater than when left to stand with the stalk uncut until it is fully ripened; and that this latter method gives a larger

produce than that of topping the stalk. The differences have been so great as to make the matter one of no small importance. Trials by measurement have never been made under my own inspection, but on each of the last two years I have seen the process of topping and cutting at the root performed side by side, and have no hesitation in giving a preference to the latter. The labor of harvesting by this process is believed to be somewhat less than by the other; the stalks as a whole are quite as good; the danger of harm from severe frosts less; and I doubt not that the corn is more and better. We all know that the other grains lose both in size and sweetness by drying upon standing stalks; and until experiments have proved the contrary, the fair presumption is that corn will do the same.

Grasses are usually forced to drag out a feeble and protracted infancy among the overshadowing and greedy grains. While delicate and tender as they can be and live, the screen is removed and they are laid bare to the scorchings of an August sun. That they so often survive the hardships of their situation, is matter of surprise. They would doubtless do better if sowed alone. I have no faith in the correctness of a common opinion, that they need something to protect them; they are the hardiest plants we cultivate; and the protection which the grains give, is too much like the wolf's protection of the lamb. Farmers, however, might not be wise in abandoning to any great extent, their accustomed course. The loss in one crop may be compensated by the convenience and worth of the other. Oats,

as far as my observation extends, when luxuriant and suffered to ripen, are usually nearly fatal to the grass. The other grains are less harmful.

To some extent our grasses may be allowed to commence their growth under more favorable circumstances. Moist lands that will admit a smooth turning, may be easily and profitably renovated by ploughing in the month of August or September, applying a dressing of manure upon the furrow, sowing the seed, harrowing and rolling. I have seen enough of this method to recommend it in entire confidence, that it is good. Where corn is cultivated without any hill, grass may be sowed among it at the last time of hoeing, to great advantage. One piece of ground laid down in this way, which has now been mowed five successive summers, has uniformly yielded a good crop and holds out better than any other piece of similar texture on which I ever labored. Another piece from which two crops have been taken, does thus far equally well, and gives fair promises for the future. This method seems admirably well adapted to light and sandy lands, where grasses often fail to take root. The Hon. William Clark, of Northampton, who was the originator of this process, told me, according to my recollection, that he now often succeeds in obtaining two tons of clover to the acre on light soils, where no one had ever before been able to form, by the old process, any sward; and where it had long been deemed entirely useless to sow grass seed among rye.

The raising of roots for cattle and swine is yearly, becoming more common. This is an improvement,

in our husbandry. Taking a succession of years, and a variety of kinds, roots may be raised at an expense of twelve and a half cents per bushel; perhaps for less. As aids in working off the coarser kinds of fodder, while the stock is kept in good condition; as means of increasing the quantity of milk, beef, and pork on the farm; and not least, as agents in enriching and increasing the manure heap, they fully repay the expense which obtains them. Taking both cost and worth into the account, perhaps neither the ruta baga, sugar beet, nor carrot, is to be preferred to the exclusion of the others. Let them all be cultivated. For milch cows, the sugar beet will probably be found the best; for horses and swine, carrots will be preferred. One Winter's trial with two horses has proved that a peck of carrots per day is quite as good for a horse as four quarts of oats; when boiled, swine thrive well upon them. One eighth, and perhaps a larger portion of all the land which a farmer tills, may profitably be appropriated to the root culture.

Let not the advance and spread of total abstinence principles, cause you to set less value upon the orchard. Apples are worth as much for cattle and hogs, as they ever were for cider. Trial was made a few years since with two cows. One ate a peck of raw apples through a week; the other had none. The next week the apples went to the other crib. The third week the first cow again received them. Then came the second one's turn, and thus they went round. The milk from these cows was measured, and each peck of apples produced about one

quart of milk.* For store swine they are worth at least half as much as potatoes. Apples will continue to be worth cultivating, even when all shall have ceased to stupify the brain and sour the disposition by the use of cider; yes, even in the temperate times when the Trustees of this Society shall cease to offer a premium upon the best sample of an article that wars against the domestic enjoyments and thrift of many an *Essex Farmer*.

Manures — the means and methods of increasing and compounding them; the particular soils and crops to which each kind is best adapted; in what state and at what seasons they should be applied; these all claim our careful attention and close study. Knowledge of these is the main-spring of improvement and success in husbandry. Attempting to farm without manure, is like setting up to be a gentleman of leisure and fashion without money. The thing wont go. The proper construction of yards for cattle and swine; the advantages of a cellar under the barn; the more common means of increasing the manure heap; I have no time for considering. Important as brevity is, however, the claims of muck to our regard must not be passed over in silence. Many of our swamps and meadows consist of an invaluable collection of decomposed vegetable matter. This by a few months exposure to the atmosphere becomes an excellent material for making most valuable composts. I am persuaded that its worth, and the best

* This experiment, I am led to suppose, was not made with so much exactness as here described; but the experimentor was satisfied that the apples produced as much milk, as stated above.—*Dec.* 16, 1839.

methods of using it, are not generally understood. A highly intelligent member of this society, recently invited me into his fields, and I have seen but little corn of fairer promise any where, than was growing upon land broken up the present season, because bound out, and where the only dressing used was fifteen or sixteen cart loads of compost to the acre; three fourths of which was meadow mud, the remainder stable manure. Another of our members, intelligent and scientific, has a fine field of corn manured with meadow-mud, mixed with quantities of stable manure and wood ashes so small as to make the whole an uncommonly cheap dressing for that crop. This field, perhaps, will teach some valuable lessons. I say no more, because, its owner will undoubtedly be the willing organ of its communication with this society. Unmixed with any other ingredients, this swamp mud, after being rendered friable by the frost, is a very considerable fertilizer of light soils; and will well repay the expense of using it as a top dressing upon grass lands I will here remark that the meadows, in which good muck abounds, are among our most productive soils and most profitable for cultivation. The necessary draining may often be accomplished while one is obtaining muck for the manure heap. Where there is sufficient consistency for the use of the turf-spade, and where a new ditch is to be opened, this labor may conveniently be performed in winter, when the meadow is so firmly frozen as to make it convenient and easy removing the mud to the upland. This is no mere theory. These feet and these hands know to the full extent,

what there is of cold and discomfort in working in the muddy ditch on days that do no discredit to January; and they will tell you that when cased in boots and mittens they will not ask for a more comfortable place. As far as the farmer has opportunity to collect materials for his manure heap, and drain his wet lands at his most leisure season, prudence directs him to embrace them. But my subject is manures. Chaptal, in his Agricultural Chemistry, says that "the excellence of a soil depends upon its containing the right proportion of each species of earth, and that is supposed to be the best soil, in which the virtues of one portion of its constituent principles correct the faults or defects of the rest." To spread the sandy wash obtained by the road-side upon sandy and gravelly soils; to put a dressing of vegetable matter upon the peat meadow or on a very black soil, would be "carrying coals to New Castle." It might not be entirely useless, but there is so much of the article already there that it might better be carried to places where it is less abundant. Is it certain that two loads of best manure from the stable would be much more serviceable on a light sandy soil than one load of manure and one of clay or tenacious mud? Can we say with confidence that pure animal manure will add more to the fertility of a vegetable soil than manure with an equal quantity of loam or sand? Would any other dressing be more valuable upon a clayey soil than one composed of half sand? May it not be true that much labour might be very profitably spent in carting soils from one portion of the farm to another, thus making more fertile mix-

tures? Should science and experience give the expected answers to questions of this kind, we have, within convenient reach, abundant materials for enhancing the productiveness of our lands. A farmer in the northern part of the county, informed me recently, that a thin coating of loam, upon wet meadow lands, has caused the growth of two tons of good English hay to the acre annually, for five or six successive years. No manure has ever been applied. Facts like this command us to give more attention than has been customary, to the mixture of soils.

The application of manures in a liquid state, so highly approved in Europe, should not remain long untried by us.

Observation satisfies me, that in soils not cold, unfermented manure, though less active than fermented in the early part of the season, will be found the most serviceable at the time when our crops need their greatest supply of nourishment. I have seen the two kinds tried repeatedly upon turnips sowed in August. In September, the plants upon the older and finer manure are far in advance of the others, but in November the tables are turned. The yield will average twenty-five per cent. more where the manure is applied in its green state. Corn, too, though more yellow upon this in June, will show as much yellow, I think more *above the husks*, in September.

Bone manure, last season, did pretty well. In all the operations I have aided to make with it the present year, it has been so mixed up with other ingredients that it is impossible to judge of its efficacy. The

corn where it was used, wore in the early part of the season a most sorrowful and forlorn aspect; the warm suns of July, however, enlivened its spirits and changed its complexion. Its present size would rebuke me were I to assert that it has not found somewhere a pretty good supply of nourishment. In the field of a friend, who left his corn to feed upon bones and meadow mud, or starve, its aspect a few weeks since indicated that the food was either difficult of mastication or hard to digest. Its growth was less vigorous and its appearance less healthy than that of the surrounding corn upon different diet. A rust, a bad rust, was upon all its leaves, while the neighboring corn on all sides was bright and healthy in its appearance. Probably you can find more economical means of enriching your soils, than that of procuring bones.

Book farming. Do *the words* produce a sneer? Be that as it may; the *thing*, or what is often stigmatized as *that thing*, is not contemptible. For what is it? Not an attempt to comply with the advice and copy the example of every one who furnishes an article for an agricultural journal; not the adoption of every method of husbandry that is recommended in print; not a departure from all the usages of our fathers and neighbors; not a preference of the theories contained in books to the results of experience. No. I pity the stupidity of the man who thinks that if we use books, we must close our eyes against the light that is beaming upon us from other sources; or that we must become mere theorisers, and the victims of ruinous experiments. What! does a man

lose his common sense, his prudence and his judgment, whenever he takes up an agricultural paper or opens a book upon husbandry? Cannot one make himself acquainted with the doings of others without losing his power to judge whether it would be well for him, in his circumstances, to copy their examples? Our brains are not so weak as this. The knowledge acquired from books does not make us all mad. But if it did, there would be more zest and true enjoyment in the learning mad-man's course, than in that of him who has learned out, and who thinks that books cannot make him wiser. I asked what book-farming is? Common book-farming is learning by means of books, new facts, opinions, results of experiments, modes of operation, and the using such parts of the information as can be turned to profitable account in our individual situations. If this be folly, we are content to be called fools. An agricultural paper will be worth to you every month, if not every week, more than its annual cost.

I have a few words for the farmers' wives. However skilful, industrious, and prudent your husbands may be, their success in money making depends as much upon you as upon them. Economy and skill on your part, in turning every thing to the best account, are essential to profitable husbandry. Perhaps there is scope for study, experiments, and improvement in your departments. All are not equally successful in the management of the dairy. Poor pastures, poor cows, poor cellars, are the alledged reasons for the difference in results. These things undoubtedly are often the causes of failure to

obtain butter in large quantities and of good quality. But may not the fault *sometimes* lie with the *dairy woman?* Is her business so simple as to be always well understood? You begin to suspect that I doubt that some of you have perfectly mastered the art of butter making. It may be an ungallant doubt; but listen to the particulars of one case in point and then judge whether I can help doubting. As stated to me, the facts are these. One of our famers, the summer before the last, employed successively and for short terms each, three different dairy women. Here the cows, the pasture, the cellar, and all the dairy apparatus were the same; and how was the result? One obtained seventeen pounds of butter per week, the second twenty-three, and the third twenty-seven. Such facts should induce many of you to vary your processes and note results.

Philanthropy, looking forward, sighs at consequences which must follow from changes that are taking place in the employments and habits of your daughters. Circumstances beyond your control have thrown the healthful spinning wheel and loom upon the pile of rubbish in the garret. Housework and the dairy do not furnish sufficient employment for all the females. Either mothers or daughters must resort to something else by which to contribute a share in the support of the family. It is too commonly the case that the daughters resort to some occupation that is not sufficiently active and invigorating. The needle is taking the bloom from many of their cheeks and vigor from their frames. The evil is augmented by that mode of dress, (I ought to use a harsher term,)

which obstructs the natural and healthy development of the lungs and chest; also by imprudent prudence in avoiding exposure to the weather; and a too effeminate reliance upon the horse, for services which heaven intended should be rendered by their own limbs! The lamentable consequences will not be confined to them; children will inherit the feebleness of their mothers, and a sickly race will come after us.

Useful as the needle is and beautiful as are its contributions to our show, I appeal to the mothers, to forbid its *excessive*, its *constant* use by the daughters. I entreat them as they value the well being of their children, to give the daughters daily and thorough training in the care and labor of the dairy and of all household affairs. It were well — well for them and for a future race, that they should revive the acquaintance which their mothers and grandmothers had with the milking-stool, the garden, and to some extent the field; for then, bloom would linger upon their cheeks; health would flow in fuller tides through all their veins; they would acquire vigor of body and soundness of mind, that will contribute to their usefulness and enjoyments when time shall bring them to the places which you now hold — shall make them the wives of farmers and mothers of the rising generation.

The command which Adam received, "to till the ground," was merciful in its design, and has ever been beneficent in its operations upon mankind. The husbandman's labors give healthful exercise to the body; and where he is attentive to the beauties,

changes, laws, and mysteries of nature, his pursuit may furnish most profitable employment to the intellectual and moral powers.

Health finds as peaceful a home, and holds possession as securely, amid the tranquil nerves and the firm sinews that are covered by the farmer's sunburned skin, as is furnished for her by the men of any other occupation whatsoever. No other pursuit is attended by greater bodily comfort. But young men and boys are prone to imagine that some more cleanly and less active pursuit would be more agreeable and less exhausting than the cultivation of the soil. The browned face, the hardened hands, the aching back, the stiffened limbs, the muddied trowsers, and dirtied shirt, are unknown in the school room, at a merchant's counter, and in the shops of many mechanics. Half the world avoid the dirt and hard labor which the farmer must encounter. It is not surprising that the young, observing this, should desire to quit the farm. Experience and observation have not yet taught them that every pursuit brings aches and various annoyances; or that dirt and hard work are not among the fatal foes to enjoyment. Perhaps a word from one who has experienced the sensations of both the student and the farmer, may not be worthless. The farmer's aches bring good digestion and quiet sleep. The night will repair the wastes of the day. But the excited nerves and throbbing temples of the student bring dyspepsia and exhausting restlessness. Morning often finds him languid; unrefreshed by his unquiet sleep. My oft repeated experience proves that the

ordinary labors of the clergyman on the Sabbath are felt more on the following day, than in a tolerably vigorous use of the scythe, the pitch-fork, and the rake, for ten or twelve hours. Whenever called upon to labor seven days in the week, I have found myself least disposed to exertion on Monday morning. My advice to the young would be, never to quit the farm in hopes of finding an employment more conducive to their physical comfort.

Abundant food for the intellect and range for its exertion may be found in the sphere in which the farmer operates. Whether this pursuit has in ages past given sufficient employment to the minds of those who have tilled our soils, comes not within the range of my enquiry. Our farmers have not been the accurate and constant observers, the faithful recorders and logical reasoners, which the spirit of the present day is calling for. Husbandry in this region has been pursued in a less scientific and intelligent manner than its nature and importance demand. This is beginning to be known and felt; many of our farmers are waking up to the business of improvement, and give promise of favorable results. The work, however, is merely commenced. Many of the important principles of agriculture are yet but partially known, if known at all, among us; very imperfect, if any, records are here kept of the results of different processes, and of the cost and worth of different crops. Vagueness and inaccuracy characterize too much of our knowledge of our own pursuit. Could you, brother farmer, be induced to undertake to make the annual address before this So-

ciety, I fear that you would not be very certain about many matters which you now consider perfectly settled; your supposed knowledge, if not composed of more substantial stuff than mine, would mostly slip through the fingers, as soon as you attempted to grasp it and write it down. You might find that your observations have been less minute and accurate than you suppose; that your experiments have been conducted with less care than you imagine; and that you are less well acquainted with your own business than you suspect. Such a lesson does no harm. I am tempted to wish that you might all learn it. You would then be made to know that we have scarcely commenced some of our appropriate studies — the study of the nature and composition of the various soils and various manures; the study of the habits and wants of the various grains, grasses, and roots; the study of the first principles of agricultural science, and of their application. Then you might perceive that our pursuit can furnish daily and abundant employment to every faculty of the mind, as well as to every limb and muscle of the body.

You might, if placed where I stand, suspect that one would find it serviceable to record whatever new knowledge he acquired, to keep accurate and full accounts of his expenditures, and his income. The difficulties which embarrass me at every step of progress in collecting matter for this address, induce me to advise every young farmer to keep a journal; to note down where and how he spends each day, to record his observations upon different modes of cultivation, the growth of crops, and every thing

connected with his pursuit. This journal might be so kept that at the close of the year it could be posted, and show the cost and value of each crop, and each variety of animals upon the farm. I know not in what other way one can learn with accuracy the comparative profits of his crops or stock. Such knowledge is surely desirable, and can be obtained. If procured in the way here recommended, the farmer's labors will become more intellectual and interesting than they now generally are. For the habit of recording at night the observations of the day, would keep the mind awake to the occurrences around it; would cause one to be accurate in his observations; inquisitive for the causes of what he witnessed, and a reasoner from the facts so carefully noted. Thus the mind being kept active and bright would acquire a deepening interest in a pursuit which is constantly presenting new views of nature's operations. If properly pursued and explained, I see not why the business of husbandry need be less attractive to the intelligent, active and enterprising boy, than is the business at the merchant's counter, the mechanic's bench, or on the merchantman's deck. But to render it such, more employment must be furnished for his mind than most of us had in the days of our boyhood. The boy is directed to learn in the schoolroom; but on the farm he must work. This is very well, though I cannot allow that it is enough. More pains than is usual should be taken to teach boys the best methods of doing their work, and the reasons for those methods; more care and experience bestowed in procuring for them the best of tools, partic-

ularly the scythe. I know not how a farmer can display greater inhumanity and improvidence, than by setting a boy to learn to mow with one of his worn out and cast off scythes; if, with the man's greater strength and many seasons' practice, the tool cannot be made to cut, what can be expected from it in the feebler and inexperienced hands of the beginner! But what I wish to present most distinctly here, is, the importance of disclosing to boys the reasons for nearly all the operations upon the farm. This method will give them a greater interest in their labors; will furnish occupation for their minds; will make them observers of the advantages and disadvantages of different modes of cultivation. It will lead them to *study* Agriculture in that period of life when the senses are the most active in noticing the various natural phenomena, and when the mind forms its most abiding habits.

Moral and religious character may be formed and nurtured as readily and successfully by one who is devoted to this most natural of all pursuits as in any other of the many employments of man. None I believe will doubt that virtue and holiness are as often found in the farmer's home as beneath the roofs of any other class of our citizens. The volume of inspiration may be and is as reverently studied there as any where; and the husbandman must be constantly receiving salutary lessons from that "elder scripture," nature. In its moral tendencies, this pursuit commends itself to all who estimate virtue and piety at their proper worth.

But how does it speak to him who inquires for its

pecuniary results? It answers in honest terms. Its promises are less liberal than are made by most other pursuits, but its performance is more to be relied upon. It offers a comfortable support and it pays this more generally than almost any other occupation.

What is its repute in the world? How does it affect one's standing in the community? In what estimation are farmers held? Let us not be deceived by appearances. The striped frock and cow-hide boots are not often introduced into the parlors of the refined, the fashionable, and the rich. The unpolished husbandman is not the chosen companion of the refined merchant and professional man. And why thus? Not, I sincerely believe, because the better portion of those who move in what are called the first circles, regard the farmers as less deserving of honor and esteem than themselves and their associates, but because there is a want of similarity and coalescence in the manners, habits, tastes and feelings of the two classes. Those who are robed in costly apparel may honor the laborer in his homely garb, and yet think, and justly think, that it would contribute to neither *his* enjoyment nor their own, to seat him at their elegant tables or receive him at their social parties. They know that this would be but cruel kindness; rude civility; an attempt to mingle oil and water. The pursuit is respected as highly as any other. Give then, farmers of Essex, give contentment a permanent home in your hearts.

Destructive storms, withering drought, and killing frosts will sometimes disappoint our hopes. But it is wise to avoid the too common habit of over estima-

ting losses and speaking of them in a tone that borders upon complaint. The public journals often intimate that we are a complaining if not ungrateful brotherhood. I fear that our common, but thoughtless modes of speaking, will too nearly justify them in casting upon us the reproach. Let us err, if err we must, on that side which shows a confiding trust in the unsearchable wisdom and boundless power of Him who has promised that "seed time and harvest shall not fail."

> "O fortunatos nimium, sua si bona norint
> Agricolas,"

has been echoed by every age since it fell from the lips of Maro's polished muse. Its truth may pass unquestioned. Though pleasure and happiness may be strewed as thickly upon the paths in which high minded and faithful mechanics, merchants, manufacturers, physicians, lawyers and divines wend their various ways, as over the husbandman's fields, it is yet true, that farmers would be a happy class, could they but appreciate in all its fulness, the good they may enjoy. — And I close, Farmers of Essex, by appealing to you to be contented with your honorable pursuit, and to press forward with "unfaltering and unwearied steps," in the processes of acquiring Agricultural knowledge, of improving your farms, and increasing your productions; by appealing to you, also, and above all, to sow to the spirit, that you may pluck unfading flowers, and gather immortal fruits in the fair gardens of the world above.

REPORTS, &c.

ON EXPERIMENTS ON MANURES.

To the Trustees of the Essex Agricultural Society:

GENTLEMEN,—The only claim to which the attention of the Committee on Experiments on Manures has been called, is that of Dr. Andrew Nichols, of Danvers. His farm in Middleton was visited in July and September. Early in the spring he had caused unleached wood-ashes to be spread on low and cold soils, and the crops of grass gave evidence that the application was very favorable. It had produced a heavy burden of grass on land which otherwise would have had but a light and sour crop.

His corn was manured with a compost made of a small portion of animal manure, seventy bushels of ashes and meadow or peat mud. The soil is a sandy loam. The growth in July was luxuriant, and in September there was a handsome display of full-grown, well-filled ears, in the judgment of the Committee about fifty bushels to the acre. This in some circumstances would not be considered a large yield, but the soil is naturally light and for many years had not been well manured. The committee were satisfied by the appearance of the crop, that this year the proper manure and good treatment had been applied, and that in ordinary seasons a compost of ashes, meadow mud and barn manure, will, on sandy

and loamy soils produce a fair crop of corn. In the locality of Dr. Nichols's farm, it would be difficult and expensive to procure animal manure in sufficient quantities to plant any considerable extent of land, and we know of no cheaper or better substitute.

The attention of the Committee was also directed to a piece of barley, on which a solution of pot-ash and peat mud had been applied, and the quantity of straw and grain appeared to have been doubled by the operation. But the advantages of this application were still more apparent on a small portion of land on which onions had been sown.—Although it was not in proper tilth for such a crop, it produced at the rate of six hundred and forty bushels to the acre. On a small part of the land none of the solution had been used; here, the crop was very light, giving evidence that the superiority of the crop was owing to the novel application.

The subject is important to farmers. Manure is the capital on which they do business. And the man who teaches them how to obtain it at a reasonable rate and in sufficient quantities, does the public better service, than if he lectured the live long day on copper and silver mines, and amused the sleepy hours with golden dreams.

The Committee think Dr. Nichols's experiment valuable, and his statement satisfactory; they recommend that it be published, and that the Society's premium of twenty dollars be awarded to him.

For the Committee,

DANIEL P. KING

Danvers, Dec. 28, 1839.

DR. A. NICHOLS'S STATEMENT.

To the Committee of the Essex Agricultural Society, on Manures:

Persuaded of the importance of the discoveries made by Dr. Samuel L. Dana, of Lowell, and given to the world through the medium of the reports of Professor Hitchcock and Rev. H. Colman, to the Legislature of Massachusetts, concerning the food of vegetables, geine, and the abundance of it in peat mud, in an insoluble state to be sure and in that state not readily absorbed and digested by the roots of cultivated vegetables, but rendered soluble and very easily digestible by such plants by potash, wood ashes, or other alkalies, among which is ammonia, one of the products of fermenting animal manures, I resolved last year to subject his theories to the test of experiment the present season. Accordingly I directed a quantity of black peat mud, procured by ditching for the purpose of draining and reclaiming an alder swamp, a part of which I had some years since brought into a state highly productive of the cultivated grasses, to be thrown in heaps. During the winter I also had collected in Salem, 282 bushels of unleached wood ashes at the cost of 12 1-2 cents per bushel. These were sent up to my farm, a part to be spread on my black soil grass lands, and a part to be mixed with mud for my tillage land. Two hundred bushels of these were spread on about six acres of such grass land while it was covered with ice and frozen hard enough to be carted over without cutting it into ruts. These lands produced from one to two tons of good merchantable hay to the acre,

nearly double the crop produced by the same lands last year. And one fact induces me to think, that being spread on the ice, as above mentioned, a portion of these ashes was washed away by the Spring freshet. The fact from which I infer this, is, that a *run* below, over which the water coming from the meadow on which the largest part of these ashes were spread flows, produced more than double the quantity of hay, and that of a very superior quality to what had been ever known to grow on the same land before.

Seventy bushels of these ashes, together with a quantity not exceeding thirty bushels of mixed coal and wood ashes made by my kitchen and parlor fires were mixed with my barn manure, derived from one horse kept in stable the whole year, one other horse kept in stable during the winter months, one cow kept through the winter, and one pair of oxen employed almost daily on the road and in the woods, but fed in the barn one hundred days. This manure was never measured, but knowing how it was made, by the droppings and litter or bedding of these cattle, farmers can estimate the quantity with a good degree of correctness. These ashes and this manure were mixed with a sufficient quantity of the mud above mentioned by forking it over three times, to manure three acres of corn and potatoes, in hills four feet by about three feet apart, giving a good shovel full to the hill. More than two thirds of this was grass land, which produced last year about half a ton of hay to the acre, broken up by the plough in April. The remainder was cropped last year with-

out being well manured, with corn and potatoes. Gentlemen, you have seen the crop growing and matured, and I leave it to you to say whether or not the crop on this land would have been better had it been dressed with an equal quantity of pure, well rotted barn manure. For my own part I believe it would not, but that this experiment proves that peat mud thus managed, is equal if not superior to the same quantity of any other substance in common use as a manure among us; which, if it be a fact, is a fact of immense value to the farmers of New England. By the knowledge and use of it, our comparatively barren soils may be made to equal or excel in productiveness the virgin prairies of the West. There were many hills in which the corn first planted was destroyed by worms. A part of these were supplied with the small Canada corn, a part with beans. The whole was several times cut down by frost. The produce was three hundred bushels of ears of sound corn, two tons of pumpkins and squashes, and some potatoes and beans. Dr. Dana, in his letter to Mr. Colman, dated Lowell, March 6, 1839, suggests the trial of a solution of geine as a manure. His directions for preparing it are as follows: "Boil one hundred pounds of dry pulverized peat with two and a half pounds of white ash, (an article imported from England,) containing 36 to 55 per cent. of pure soda, or its equivalent in pearlash or potash, in a potash kettle, with 130 gallons of water; boil for a few hours, let it settle, and dip off the clear liquor for use. Add the same quantity of alkali and water, boil and dip off as before.

The dark colored brown solution contains about half an ounce per gallon of vegetable matter. It is to be applied by watering grain crops, grass lands, or any other way the farmer's quick wit will point out."

In the month of June I prepared a solution of geine, obtained not by boiling, but by steeping the mud as taken from the meadow, in a weak lye in tubs. I did not weigh the materials, being careful only to use no more mud than the potash would render soluble. The proportion was something like this: peat 100 lbs., potash 166 lbs., water 50 gallons; stirred occasionally for about a week, when the dark brown solution, described by Dr. Dana, was dipped off and applied to some rows of corn, a portion of a piece of starved barley, and a bed of onions sown on land not well prepared for that crop. The corn was a portion of the piece manured as above mentioned. On this the benefit was not so obvious. The crop of barley on the portion watered was more than double the quantity both in straw and grain to that on other portions of field, the soil and treatment of which was otherwise precisely similar.

The bed of onions which had been prepared by dressing it with a mixture of mud and ashes previous to the sowing of the seed, but which had not by harrowing been so completely pulverized, mixed and kneaded with the soil as the cultivators of this crop deem essential to success, consisted of three and a half square rods. The onions came up well, were well weeded, and about two bushels of fresh horse manure spread between the rows. In June four rows were first watered with the solution of geine

above described. In ten days the onions in these rows were nearly double the size of the others. All but six rows of the remainder were then watered The growth of these soon outstripped the unwatered remainder.

Mr. Henry Gould, who manages my farm on shares, and who conducted all the foregoing experiments, without thinking of the importance of leaving at least one row unwatered that we might better ascertain the true effect of this management, seeing the benefit to the parts thus watered, in about a week after treated the remainder in the same manner. The ends of some of the rows, however, which did not receive the watering, produced only very small onions, such as are usually thrown away as worthless by cultivators of this crop. This fact leads me to believe that if the onions had not been watered with the solution of geine, not a single bushel of a good size would have been produced on the whole piece. At any rate it was peat or geine rendered soluble by alkali that produced this large crop.

The crop proved greater than our most sanguine expectations. The onions were measured in the presence of the chairman of your committee, and making ample allowance for the tops which had not been stripped off, were adjudged equal to four bushels to the square rod, or at the rate of 640 bushels to the acre. In these experiments 7 lbs. of potash which cost 7 cts. a pound bought at the retail price, were used. Potash although dearer than wood ashes at $12\frac{1}{2}$ cents per bushel, is, I think, cheaper than the whiteash mentioned by Dr. Dana, and sufficiently

cheap to make with meadow mud, a far cheaper manure than such as is in general used among our farmers. The experiment satisfies me that nothing better than potash and peat, can be used for most if not all our cultivated vegetables, and the economy of watering with a solution of geine, such as are cultivated in rows I think cannot be doubted. The reason why the corn was not very obviously benefitted, I think, must have been that the portion of the roots to which it was applied, was already fully supplied with nutriment out of the same kind from the peat ashes and manure put in the hill at planting. For watering rows of onions or other vegetables, I should recommend that a cask be mounted on light wheels, so set that like the *drill* they may run each side of the row and drop the liquid manure through a small tap hole or tube from the cask, directly upon the young plants. For preparing the liquor, I should recommend a cistern about three feet deep and as large as the object may require, formed of plank and laid on a bed of clay and surrounded by the same, in the manner that tan vats are constructed; this should occupy a warm place, exposed to the sun, near water, and as near as these requisites permit to the tillage lands of the farm. In such a cistern, in warm weather, a solution of geine may be made in large quantities with little labor and without the expense of fuel, as the heat of the sun, is, I think, amply sufficient for the purpose.* If from further experiments it should be found economical

* Perhaps in an excavation in a peat meadow, which would fill with water spontaneously, a solution of geine might be still more cheaply obtained, by simply adding potash, ashes, &c. to the stagnant water.

to water grass lands and grain crops, a large cask or casks placed on wheels and drawn by oxen or horse power, the liquor from the casks being at pleasure let into a long narrow box perforated with numerous small holes, which would spread the same over a strip of ground, some 6, 8, or 10 feet in breadth, as it is drawn over the field in the same manner as the streets in cities are watered in summer.

ANDREW NICHOLS.

I certify that I measured the piece of land mentioned in the foregoing statement, as planted with corn, on the 21st of September, 1839, and found the same to contain two acres, three quarters, thirty-one rods. JOHN W. PROCTOR, *Surveyor.*

ON TURNING IN GREEN CROPS AS A MANURE.

The Committee on the subject of turning in Green Crops as a Manure, REPORT:

That they have examined Mr. Keely's communication, and are of opinion that his experiment is not such, as to entitle him to the Society's first premium, inasmuch as the plants turned in, are not the most succulent for the purpose of enriching the soil; also, because the experiment was extended only to a single year, without reference to the future improvement of the soil.

The Committee are of opinion, that a part of the field should have been manured in the usual way, in

order to test with exactness, the comparative advantages of the two processes; but do not hesitate to express their satisfaction, at the result of Mr. Keely's experiment as far as it went, and would recommend that a gratuity of ten dollars be awarded him for his valuable communication.

For the Committee,
JOSEPH KITTREDGE.

Dec. 31, 1839.

JOHN KEELY'S STATMENT.

To the Committee of the Essex Agricultural Society, on turning in Green Crops as a Manure:

Gentlemen,—Perceiving that for several years no claim has been entered for premium on Green Crops, and deeming the subject one of great importance, I have concluded to present you with a statement on this subject. And I do it more with the hope that perhaps others may become incited to try the efficacy of this mode of manuring, than on account of the great result abstractedly considered.

The experiment was made on the same estate where the crop of rye was raised, on account of which I obtained the Society's premium, in 1832, but on a part which is very inferior in quality, to the piece on which that crop was raised. It is indeed so poor that nothing but sorrel grows upon it spontaneously.

But, although I have long been firmly convinced of the great efficacy and economy of Green Crops, yet I thought *sorrel* alone scarcely fit even to plough in for manure, until the following circumstance convinced

me of the contrary. At the close of June, 1837, the ground then being too wet to hoe [as a storm was just clearing off] I began to plough the piece of land on which I intended to sow rye, principally, to prevent the sorrel from seeding. The next day was fine and I left the remainder unploughed, until September, when the whole was ploughed and sown together.—The following spring a difference was seen on that part where the sorrel had been ploughed in, which difference became so striking, that my neighbors saw it and inquired to know the reason. This determined me to try the experiment which is here presented.

At the close of June, 1838, while the sorrel was yet in blossom, I ploughed it in immediately after a heavy rain, and sowed upon the furrow one bushel of buckwheat per acre. On the sixth and seventh of August immediately after a rain, and while the buckwheat was in blossom, that was also ploughed in.—On the thirteenth September, it was sowed with winter rye. The present season, the striking difference between this rye and that in the same neighborhood on land of better quality, was seen and remarked by several individuals, and some persons who have known the estate for more than forty years, say, that they never before saw such heavy rye on that part. The whole piece contains nearly $2\frac{3}{4}$ acres; and it yielded 48 bushels of rye, of excellent quality, weighing 59 lbs. per bushel. I should remark that about $\frac{1}{3}$ of an acre of this piece is so poor that no sorrel ever grew there; the buckwheat was very light, and of course the rye was also. I should judge that upon rather more than two acres the produce was twenty

bushels per acre. The previous crop on the same piece in 1837, did not average quite 6 bushels per acre.

You will perceive that the whole extra expense of this experiment, is one ploughing and one harrowing, and 1 bushel of buckwheat per acre, which would cost about three dollars and a half per acre, and the extra produce 14 bushels per acre.

Although this crop is not large compared with other crops upon rich land, yet for land of this poor quality, I consider it very large. Nor is this all. This crop was not obtained by extra expense, to force the land to yield more than it could continue to produce, it is only the *first* of a series of crops, which if continued by the same management, undoubtedly will, in a few years, double its fertility, instead of exhausting it; and especially if the stubble is ploughed in soon after the crop is harvested, for this with the weeds amongst it, will furnish a *third* green crop, and the scattering grain which would otherwise be lost, will then grow and very materially increase the first green crop the ensuing season.

You will allow me to remark that experience and close observation upon the management of green crops, have convinced me that three things, among others which may be more obvious, are essential to a successful result. First, it is absolutely necessary that the plough used is of good construction. Second, that some method be devised to prostrate the crop before the plough, or it will not be covered. I use a wooden roller about four inches in diameter, and 16 inches long, fixed on the end of the plough

beam, in a frame temporarily put on for the purpose. Third, it is necessary that the land should be ploughed very soon after rain, while it is moist, or the plough will *crowd* the furrow instead of turning it handsomely. It will also be of considerable advantage to roll the land after each ploughing.

Very repectfully,

JOHN KEELY.

Haverhill, Sept. 24th, 1839.

ON MILCH COWS AND HEIFERS.

The Committee on Milch Cows and Heifers, beg leave to offer the following REPORT:

A larger number of entries have been made this year than we have ever before seen. Seven cows and ten heifers were in the pens, offered for premium, and several others, which did not come within the rules of the Society. In respect to quality as well as, number, the improvement was very conspicuous, there being at the show last year but one cow, and some ordinary heifers, all of second quality. Whereas the present year, both cows and heifers were of superior quality, in beauty and excellence. The cow offered by Mr. Caldwell, of Byfield, particularly attracted the attention of the committee and the public; but as she did not come within the rules of the Society, we should not be warranted in awarding a premium. The cow offered by Mr. Ebenezer Upton, of Danvers, was considered an extra cow.

Among the ten heifers offered, only one was in milk; the others were yearlings. They were all

promising, and gave evidence of the increasing interest in the community, in raising a better kind of stock, than has been heretofore manifested. The greatly enhanced value of all kinds of stock for a few years past, seems to have given an impetus to the farmers, and induced them to bestow more particular attention to the subject; they seem to have been more careful to select the best for raising, instead of selling the best to the butcher. Fifty dollars for a cow, till within a year or two, has been thought to be a very great price. But within two years, double, and in some instances three times that sum has been paid for cows, in the County of Essex, and the income has warranted the expenditure. If good cows are worth fifty dollars, and superior cows from that to two hundred, as in one instance mentioned by the agricultural commissioner, they certainly will repay the farmer for bestowing his best attention in selecting, and very nice care in raising young stock. Of course when cows command such prices, corresponding good treatment will be bestowed upon them in feeding and providing for them; and we cannot doubt for a moment, but the farmer is always fully remunerated, for the good care he may give to his stock, and especially to his cows. We believe that if some attention is given to have cows always supplied with green succulent food, the trouble and expense will be fully reimbursed, in the increased quantity and improved quality of the milk which they will yield. It is believed that nothing is better than good sweet grass feed, when it can be had in abundance. But in some parts of the sea-

son the grass is too much dried up. At these seasons some cultivated roots should be in readiness to supply the deficiency. Various kinds of roots and cultivated vegetables have been used; carrots, ruta baga, mangel wurtzel, sugar beet, and green corn fodder, planted for the purpose, or top-stalks and pumpkins, are all very good, and we do not think there is much difference. Turnips, though eagerly eaten, have not been thought to be quite as good. We say that we believe the farmer will be amply paid for the extra trouble of providing some kind of succulent food for his milch cows in dry seasons. We have noticed that when only one cow has been kept, by the individual offering for premium, they have most generally obtained the Society's premium, and we attribute this to the more particular attention given to feeding one cow, than is commonly given to many.

My own experience is not much, but I have noticed that when I kept only one cow we made as much butter, twelve pounds a week, as when I have kept two, and one of the cows being the same and running in the same pasture. If we did not misunderstand the commissioner, Mr. Colman, the cow for which $200 was paid, yielded the year previous to sale, within 25 quarts of 200 dollars worth of milk, at five cents a quart, sold at the door; and the cost of keeping the cow was eighty-seven dollars for one year. Now if such an extraordinary produce may be obtained from one cow only, may not cows in general be made to yield much more than they now do, and would it not be economy to give to the

subject more attention, by feeding as above proposed, and sheltering from all cold and severe weather. Such advice we know has been often given by agricultural writers, but it needs to be often repeated.

The Committee have with no little difficulty awarded the premiums as follows:

On Milch Cows.

To Franklin Bartlett, of Newburyport, 1st premium, $10 00

" Nathan Tapley, Danvers, 2d prem. 7 00

" Geo. Spofford, Georgetown, 3d " 5 00

Heifers in Milk.

To Joseph Danforth, of West Newbury, 1st premium, $7 00

Yearlings.

" Ebenezer Upton, Danvers, 1st prem. 3 00

" P. M. Dole, Newburyport, 2d " 2 00

R. A. MERRIAM,
NATHANIEL BERRY,
SAMUEL PERLEY, Jr.
MATTHEW HOOPER,
JOSHUA L. NEWHALL,
SAMUEL DODGE,
} Committee.

Georgetown, Sept. 26, 1839.

POSTSCRIPT.

For the last year or two a fatal distemper has prevailed among the cattle and animals of the County of Essex and carried off many cows. Some individuals have lost half their entire stock, and some more. It has not been confined to neat cattle, but horses, hogs, and sheep, have been affected. The disease

has been very fatal, one half of those affected, at least, have died, as is supposed; for it is difficult always to know all those that have been diseased. The disease lasts but four or five days, and sometimes the first knowledge of an animal's being diseased, it would be found dead in the yard. It is supposed to be contagious, by contact, as when it has appeared in a stock of cattle, many of the stock have fallen victims, and in two cases in Topsfield, where persons were engaged in taking off the hides of the animals that had died with the disorder, their arms swelled up, and broke out in large boils, which ulcerated and formed a large tough black scab, some of them the bigness of a twenty-cent piece, and some smaller. Some, not very severe, constitutional symptoms manifested themselves. The sores were sometimes in healing, four to six weeks. After these cases of apparent infection appeared, the animals were buried without flaying, and with as little connection as possible. It is supposed that these two individuals were inoculated, as one of them, in flaying, made a slight wound on his hand with the knife, and the other had a fracture of the skin. The disease was so rapid that little or nothing was attempted to be done by way of remedy. The first appearance of disorder was when the cow came from the pasture at night, she would give evidence of not filling herself as well as usual, and would give a less quantity of milk, would refuse the ordinary kinds of food, and eat but little of the more delicate and inviting, and in three or four days refuse all kinds and soon lie down and die, and some purging of blood would ap-

pear as the last effort of nature. Pain and distress were more particularly manifested in horses, at the close of life, by frequent lying down and getting up, and by grunting and struggles. The disease was most prevalent in Topsfield and vicinity in July and August. The disease is probably a murrain, such as we read of in the bible and ancient writings. Epizooty is a term bestowed upon malignant distempers among animals. It signifies a plague or murrain among animals. In the common acceptation of the term, murrain is limited to distempers among useful and domesticated animals, whereas *epizooty* comprehends those pestilential ravages to which the whole living creation is liable. In one of the plagues of Egypt, spoken of by Moses, is recognized a most destructive epizooty, extending to all domesticated animals. Other accounts are given in ancient history of malignant and contagious diseases among animals.

In modern history, more particular accounts are given of pestilential and eruptive diseases, resembling small pox and plague in men. By some inoculation was tried and supposed to modify the disease and lessen its fatality. This, however, was thought might spread the disease where it did not before exist, and was therefore prohibited by government. "In 1661, after a hot dry summer, a kind of phrenzy spread among animals, especially horses, cattle and sheep; but was not known to be contagious. It was principally confined to northern climates; one or more worms were found in the substance of the brain. Numbers of intestinal worms were found in

an epizooty that prevailed in 1663, and were thought to be the cause of the distemper. Analogous symptoms, though not equally fatal, attacked almost the whole cattle in the Danish territory, in 1674.

"France was visited by an epizooty, among the black cattle, in 1682. The animal functions were uninterrupted until the attack, when sudden death ensued. This was accompanied by a gangrene of the tongue, which came away in pieces. Those who attended the cattle, are said to have been infected by the disease and to have died. Its progress was regular, and marched with astonishing rapidity, at the rate of 12 miles a day. Thus it spread from the frontiers of Italy to Poland. Between the years 1705 and 1711, a distemper called the flying chancre or bubo, which the latest authors denominate a real plague or murrain, was found to be making terrible ravages in Europe. It had been imported by a single ox, brought into the Venitian states from Hungary and Dalmatia; and it was thence disseminated throughout the Roman territory and the kingdom of Naples, sweeping away almost the whole cattle in its progress. It did not reach France till 1714; and in the same year, having been some time prevalent in Britain, the most vigorous means to repress it were adopted by government. All the animals were ordered to be destroyed that were attacked with it, and buried deep in the earth, and a compensation allowed to those who thus lost their property. The violence of the disease did not last above three months, during which time the counties of Essex, Middlesex, and Surrey, lost 5857 cattle. At this time it was ob-

served that cows being brought to water to drink, many became giddy, fell down in convulsions, bled copiously at the mouth and nose and died. Other nations suffered more severely; Piedmont lost 70,000 cattle; Holland 200,000; and the full extent of the epizooty throughout Europe, was estimated to have destoyed 1,500,000 animals. All these perished of the infection disseminated by the single diseased ox from Hungary. But the disease was marked by considerable distinctions in different countries, and some of its symptoms bore little resemblance in one place to what were seen in another."

In 1730, a contagious disease appeared among black cattle in Germany, and afterwads in France, which affected the tongues, was called a blain of the tongue, which degenerated into a cancerous ulcer, whereby the organ was almost totally destroyed. The commencement and termination of the disease was sometimes witnessed within twenty-four hours. A most destructive epizooty ravaged Europe for ten years from 1740. This disease was exhibited by shiverings, palpitations of the heart, difficult respiration, cough, coldness of the hoofs and horns, cessation of the natural evacuations, sometimes the animal fell down as if struck by apoplexy. Eruptions covered those which survived the violence of the attack. It was evidently contagious, and the strongest precautions were adopted to repress the infection. Former experience had proved, in the history of an epizooty by Laneisi, that they could not be too strictly adopted; for certain drivers having brought their cattle to a fair in Italy, in the year 1713, a pro-

hibition was issued against holding it, in order to prevent the dispersion of the cattle. However, the drivers rather than be disappointed of a market, conducted them privately to Rome, and sold at a low price. Immediately afterwards, a contagious distemper spread through the whole Roman territory, and destroyed 300,000 animals. Notwithstanding precautions were used, such as burying the diseased cattle, interdicting the sale of their flesh, untoward accidents happened; and contagion was disseminated by the skin. But at different places in France, guards were placed, to prevent any cattle from approaching them, whereby the stock was preserved in health, though the malady was making rapid advances in the surrounding country.

The Marquis de Courtioron instituted numerous experiments, regarding this distemper, from which he concluded that it exhibited itself on the fourth day from infection, that the ninth was the crisis, and that the contagion could spread only from direct communication between two animals. In the course of the year 1746, a new remedy, inoculation, had been attempted at Brunswick, and in an epizooty which appeared in Holland, the same remedy was repeated in 1755, though with little success, and recommended by Dr. Lagard in 1757. The distemper in the latter country was considered absolutely similar to small pox; and the infection was said to have been brought from Holland by two white calves of a favorite breed, or by two skins of diseased animals. Whatever was the cause many animals perished of it. Different epizooties appeared about the same

time, among the cattle, horses, and reindeer of France, Austria, Finland, and Lapland. Swine, dogs, and even poultry are said to have been attacked by it. Russia did not escape, and if we can credit the relations given, the malady was propagated by the skin of a bear, even to the destruction of mankind. These epizooties were either perpetuated or renewed during the years immediately subsequent, and, if possible, raged more extensively among the various genera of animals. The horses of Switzerland, the cattle of other countries, sheep, and particularly lambs, were swept away in thousands.

In 1764, dogs were attacked throughout France, poultry in Spain, and the rest of the feathered tribes throughout Europe.

The milk of infected cows spread the contagion; for those animals supplied were covered with pustules; and people who suffered with it, in the same manner, experienced great difficulty in swallowing, and burning heat in the throat.

For some years after this period an epizooty raged among the black cattle of Holland, carried off the whole cattle belonging to one district. Its attack was commenced all at once, by the animal becoming dull and rejecting drink. Fever and shivering, attended by a general prostration of strength, followed; the ears and horns grew cold, a cough became unremitting, a purulent matter was discharged from the nose, and an ichorus fluid from the eyes. The hide was puffed up, and a crackling, like that of parchment, was heard on pressure. Some were attacked by diarrhœa, others by constipation, from

the fourth to the sixth day of the disease, and they died from the second to the eleventh day after the commencement. The blood of the animal then proved thin; the intestines inflamed and putrid, the lungs gangrenous, the gall bladder always greatly enlarged, and many worms were found in the liver. The symptoms were generally the same; and Camper, who strictly watched the appearance, progress, and issue of the malady, pronounced it a contagious putrid fever. Animals once attacked were never liable to its recurrence, or at least very rarely; hence Camper, from that and other circumstances, concluded that to repress it, four principal objects are to be kept in view. 1. To endeavor to prevent the malady and abate its virulence. 2. To preserve the fluids from corruption. 3. To preserve the strength of the animal. 4. To cleanse the intestines immediately on the appearance of the disease. There was no way of guarding against contagion, but by excluding diseased animals, and all substances by which infection might be communicated. He also conceived that inoculation was the most probable method of averting the malignity of the distemper; forty-six out of ninety-two infected animals were saved, and of cows that were not very far advanced in gestation, three fourths were saved. Inoculatio n was successfully practised in Denmark; in the first three years of the experiment, less than a sixth of the infected animals died. Strong prejudices in England were opposed to it, lest it might introduce the disease where it did not before exist. Camper established several important points; such as, that the epizooty

imparted by inoculation, was exactly similar to that communicated by natural infection; that it was of a much milder nature; as also that animals infected in this way, resisted both natural contagion and the consequences of inoculation. The malady proved extremely destructive in Holland; of 286,647 affected, 208,354 died. In 1771 the disease broke out in Picardy, by the introduction of a diseased cow, and after being subdued, appeared again in 1773 with redoubled violence. Numerous remedies were tried, but their inefficiency being proved, the extirpation of the malady was sought in the destruction of the animals, by strangulation, without the effusion of blood, and their carcases buried with their hides entire. Similar ordinances were promulgated in France, with their hides cut to pieces, to prevent the traffic in them, and that all the fodder, litter, and whatever else which might communicate the contagion should be buried with them. By these and other prudent regulations, this, which was one of the epizooties best characterized in history, was repressed.

During the period that contagious distempers swept away the cattle of Europe, a malady, even more rapid in its progress, appeared in the West Indies. Its effects seem to have been more minutely traced in Guadaloupe, where it first attacked black cattle, then horses, and afterwards spread to men. Animals apparently well, in good condition, and feeding as usual, were suddenly seized with shivering fits, attended by convulsions in the spine and abdomen, which sometimes carried them off in an hour. Almost

all the negroes who opened the dead bodies had boils on their arms, attended by much fever; and those feeding on their flesh had like symptoms. Examples were given of several who actually died from infection. Something similar was witnessed in France, where persons skinning the animals died of the contagion, the effects of which were immediate.

Between the years 1780 and 1790, a pestilential disease prevailed among the cattle in the northern counties of Scotland, vulgarly denominated *hasty*, from the rapidity of its progress.

The Eastern parts of Asia were visited by a destructive epizooty among the horses, especially in 1804; and after the severity abated, in 1805 and 1806. it was renewed with uncommon virulence in 1807. In so far as we can learn, this disorder consisted of a sudden swelling, attended by shivering fits, an abscess formed most commonly in the head, and the animal died in twelve hours at farthest. But in many instances, its commencement and termination were infinitely more rapid, and death was known to ensue in half an hour. The malady was observed early at Ochotsk. Cattle, reindeer, and horses all suffered; and at last, a caravan, consisting of eighty, preserved only ten. The Russian Government of those distant regions, in order to repress the disease, ordered all the animals perishing of it, to be burnt; but before its nature was well understood, the Jakutchiuns, to whom horse flesh is grateful, unwilling to lose such a source of subsistence, fed on it. Most of those who had done so, died within a day or two; and a few lingered a fortnight. Those who

escaped were attacked by severe swellings, in the upper lip and cheeks, which broke out and left great scars.

Besides these epizooties of which a general historical view has been given, others, extremely rapid in their progress and destructive in their effects, could be detailed, and their sources might admit of various conjectures. Most of those which attack the larger and more important animals, bear a strong resemblance to the plague among mankind. They have been traced, in some instances at least, to miasmata, which if not the origin of such a terrible malady, unquestionably foster its germs, and they are more destructive in all regions during the same period that the plague is most fatal. Probably some animals are exclusively the victims of certain epizooties, while others of different genera may escape unhurt; but it is to be doubted whether any races are totally exempt from them. Thus we are told that the fish of the Lake of Constance perished from a general mortality in 1722. We have seen that many of the feathered tribes occasionally suffer, in different countries; infectious disorders frequently prevail among dogs ;; and a contagious distemper attacked the cats of Westphalia in 1682; while the same species were almost extirpated from the Feroe islands by an epizooty, in 1798. It is not an improbable theory that entire genera of animals, once inhabiting the surface of the earth, or the waters, are now extinct from contagious maladies.

In the first or second volume of the New England Farmer, mention is made of a contagious disease

breaking out in a drove of cattle, brought in from the country. They were ordered back again by the authorities, and those that died to be buried; but one individual wishing to save the hide, took it off, caught the distemper, and died. Two others tried out the tallow of another, and both it is related died.

In these remarks we have drawn largely from the Edinburgh Encyclopedia, where our readers are referred, under the article Epizooty.

We have thought proper to add this supplement to our report, that the farmers in Essex may be on their guard another season. Although the distemper has appeared in several towns, in different parts of the county, yet, it is feared, it has not yet exhausted itself, and may again return another season, when heat, drought, or moisture may favor it.

The small pox is now more prevalent than it has been for many years, in New England. The connexion between epizooties, plague, and small pox, which has been hinted before, is another reason for watchfulness.

R. A. MERRIAM.

Topsfield, January, 1840.

FRANKLIN BARTLETT'S STATEMENT.

To the Committee on Milch Cows and Heifers:

GENTLEMEN,—The cow which I offer for the Society's premium was bought June 8th, 1839, her calf then four days old. The calf was sold when twenty-four days old, for $6,00

Thirty three gallons of milk sold while the calf was with the cow, for	5,33
Milk sold from the cow from June 30th, to July 30th, was 112 gallons, amounting to	17,92
From July 30th, to August 30th, 109 gallons, amounting to	16,44
From August 30th, to Sept. 24th, 80 gallons, amounting to	16,00
Milk used during the time, 16 1-4 gallons,	2,60
Estimated value of the milk,	$64,29

The feed of the cow was a common pasture, without any provender, or extra keeping, whatever

FRANKLIN BARTLETT.

Newburyport, Sept. 26, 1839.

NATHAN TAPLEY'S STATEMENT.

To the Committee of the Essex Agricultural Society.

GENTLEMEN,—The milch cow, which I have offered for exhibition this day, is seven years old. I have owned her three years. I purchased her in the spring, with her second calf. I believe she came into Danvers, in a drove from the country. She calved the last of March. We think her more remarkable for quality, than the quantity of her milk, and having always considered her an extra cow, we were induced this season to keep an account of the butter her milk would produce. The following is the result during eight weeks :—

The week ending May 25th, she gave

228 1-4 lbs milk, which produced				$12\frac{1}{2}$	lbs. butter.
The	week	ending	June 1st,	$12\frac{1}{4}$	"
"	"	"	" 8th,	$12\frac{1}{2}$	"
"	"	"	" 15th,	$12\frac{3}{4}$	"
"	"	"	" 22d.,	12	"
"	"	"	" 29th,	$10\frac{3}{4}$	"
"	"	"	July 6th,	$12\frac{1}{4}$	"
"	"	"	" 13th,	13	"
				$98\frac{1}{4}$	

$18\frac{1}{4}$ lbs. of her milk, produced about one pound butter.

It was not convenient, to reserve all her milk after this time, but we are satisfied from the quantity she gave, that she would have made as much butter for several weeks after, and still continues to do well.

She has fed in a common clay-land pasture, through the season. On the 22d of June, I commenced giving her a quart of meal in the morning, and a quart at night; but did not perceive any material difference, either in the quantity or quality of her milk. Her butter is of fine color and flavour.

Respectfutly yours,

NATHAN TAPLEY.

Danvers, Sept. 25, 1839.

GEORGE SPOFFORD'S STATEMENT.

To the Committee on Milch Cows:

GENTLEMEN,—My cow calved the 3d day of May last. The calf was kept on the cow six weeks—and at *nine* weeks of age was sold for twenty dollars.

The greatest quantity of milk given in any day was 19 quarts and 1 1-2 pints; averaging for a month after the calf was taken off 18 quarts per day. She has averaged for the last four weeks, 12 quarts per day. I have sold and used during this time 3 quarts of milk per day, and made 32 lbs of butter. Her keeping has been common pasture, till the last four weeks, which has been fresh feed with four quarts of oatmeal per day mixed with a pail of water.

Very respectfully yours,

GEORGE SPOFFORD.

Georgetown, Sept. 26, 1839.

JOSEPH DANFORTH'S STATEMENT.

To the Committee on Milch Cows:

GENTLEMEN,—This heifer was raised by Joseph Danforth, in West Newbury. She was two years old the 17th day of April last. She has given milk from the 8th of May; she has not had any provender since she was turned out to pasture the first season. The average of her milk has been from the 8th of May to this time, 2 gallons per day. She has had no fall feed this season. She has made from 3 to 5 lbs butter per week, besides what milk there has been used in the family of 4 and sometimes 5 persons.

N. B. This heifer was taken from the cow when three days old, at which time the cow died, and brought up by hand.

JOSEPH DANFORTH.

Sept. 24, 1839.

EBEN UPTON'S STATEMENT.

To the Committee on Milch Cows and Heifers.

GENTLEMEN,—I exhibit for premium my red cow, nine years old. She came in to milk on the 10th of last April; the calf was allowed all the milk she would suck for four weeks, (then taken off to raise,) during which time and up to the 20th of May, I sold 18 gallons of milk, and churned 19 lbs. of butter. From the 20th of May, to the 1st of July, inclusive, [42 days] she gave 1838 pounds of milk, an average of 43 $\frac{3}{4}$ pounds per day, from which, after using what was wanted in the family, 66 lbs. of butter, were made. From the 1st of July to the 20th of the present month 90 lbs. of butter were made. Quantity of milk used in the family, one quart daily. Whole quantity of butter made during the season, 175 lbs.; 40 lbs. of which, made in the month of June, are in the Hall of the Society. The Committee will notice that milk is obtained from three teats only, the other she cut with one of her hoofs in 1837, on the day she brought a calf. Unfortunately the gash could not be healed, and the milk runs to waste. Keeping, ordinary grass feed.

I also exhibit for premium and for the notice of your Committee, a heifer, sixteen months old, from the above described cow. She was taken from her mother when two days old, and turned away to pasture with a cow that gave four quarts of milk daily, and weaned when 3 1-2 months old. Her keeping during the winter, was English hay and occasionally a little meal; the present season, common pasture feed.

Respectfully yours, EBEN UPTON.

Danvers, Sept 26, 1839.

ON RECLAIMED MEADOWS.

The Committee on reclaimed meadow and swamp land, respectfully REPORT:

That applications for premiums have been made by Daniel Putnam of Danvers, and William Osborn of Lynn. The committee have viewed the premises of the claimants, and examined the statements which are here annexed, and recommend the Society's first premium of $20, be awarded to Mr. Osborn; and the second premium of $10, be awarded to Mr. Putnam. Mr. Osborn has given a detailed account of all his expense and income. This is as it should be; so that our brother farmers may see, how profitable it is, and those who have meadows, may go and do likewise. The Committee have great pleasure in remarking, that they have reason to believe, that there is an increasing attention paid to the cultivation of that part of our land, which has remained so long uncultivated, and, comparatively, worthless; but which has proved by experience, to be in point of fertility, surpassed by none, even the fertile prairies of the West. It has been ascertained, by experience, that nearly all kinds of grains and vegetables that our climate affords, can be raised on meadow land to good advantage. Four and a half tons of English hay has been cut on an acre in one year. One individual says, 400 bushels of potatoes is his usual crop. Rye, oats, and corn, have also been raised in like proportion. It is an old saying, that it is a good shot to kill two birds with one stone; but in this case, more can be done. In removing the stumps and

logs with which many meadows are incumbered, the fuel will more than pay the expense; in draining the meadow the mud will more than pay the expense of ditching, to be carted into the hog pen, cow yard, or compost heap, then to be applied to upland, as it makes a valuable manure. Two crops will usually more than pay the expense of cultivating them, and then the land, instead of being comparatively worthless, in most cases will be worth at least one hundred dollars per acre.

In regard to the best manner of managing meadow land, different persons have different opinions; as it is natural for a person to be partial to his own way if he has tolerable success. Grain or roots may be cultivated profitably on meadows that can be well drained. But there are meadows that cannot be drained so much as would be desirable, or that are occasionally overflowed; such are more suitable for grass. There are meadows within the knowledge of the committee, that have produced good crops of English hay without any other dressing than sand; others have used gravel with equal success. Good crops of corn and potatoes have also been raised without manure, sand or gravel being put in the hill. How much better to cultivate land when suitable dressing can be procured from the gravel knoll or sand bank, than to neglect such land, and haul manure some miles after paying an extravagant price for it, to be applied to upland, and perhaps not raise an equal crop. Although good crops have been raised without manure as above stated, yet it is thought that a little compost manure may be profita-

bly applied. Notwithstanding all that has been said, there are those that are so opposed to the new method of farming, as they call it, or so tenacious of the honor of their venerable fathers, that they will not turn to the right hand nor to the left, from the path in which they trod. But I would ask whether farmers ought not to keep pace with the improvements of the day, and if they would be as good husbands as those that have passed off the stage before them, whether they ought not to improve just so far as the light of science developes itself?

Again, some say that they cannot afford to make improvements, but it will do for Mr. A. or B., that has money. In conversation with an individual that had been improving a part of a small meadow, he said, if I could afford to hire help, I would reclaim the remainder of it. While in conversation, he acknowledged that one crop of hay had actually paid all the expense of cultivation. Now if a man under these circumstances cannot afford to hire help, I know not who can.

It is not the intention to convey the idea that all meadows in all seasons will produce four and a half tons of hay or four hundred bushels of potatoes to the acre, for it cannot be expected. But it is the intention to convey the idea that meadow land will produce more net profit than any other; as it requires less manure, and is less liable to be affected with drought, or wet, if it is properly drained.

For the Committee.

JOSEPH HOW, Chairman.

Dec. 31, 1839.

WILLIAM OSBORN'S STATEMENT.

To the Committee of the Essex Agricultural Society, on Reclaimed Meadows :

GENTLEMEN — Enclosed you will find a copy of my statement of 1838, and I now hand you a statement in addition to that, for 1839, and will only remark in advance, that you may perhaps think the yield of potatoes and the quantity of manure small for the land cultivated; but in addition to the manure, I burnt a considerable quantity of brake and other roots found on the meadow and used the ashes. The crop of potatoes would have been larger if I had not used lime instead of manure on a large part of the meadow, where in gathering I found a large decrease in the yield; another cause of decrease was in planting the St. Helena potatoes instead of Chenangoes, which I have reason to think, from a few that were mixed, if I had planted all of that kind, I should have had at least one third more.

Crop for 1838, per Account,	$332 57
Income for 1839.	
300 bushels St. Helena potatoes, at 45c.	135 00
57 " Rohans, at $2 00,	114 00
2 tons Hay, $12,	24 00
41 bushels of Carrots, 25c.	10 25
74 " of Sugar Beets, 30c.	24 50
Squashes and Pumpkins,	2 00
40 bushels Mangel Wurtzels,	10 00
10 " Ruta Baga, at 25c.	2 50
Wood for family one year, and for boiler for hogs,	50 00
	$702 82

Amount of Income brought over,		$702 82
Expenses.		
Expenses of 1838, per account,	$246 67	
1839. 74¼ days work, farm help,	50 45	
Extra labor hired,	26 45	
4 cords of Manure,	16 00	
Seed Potatoes,	15 00	
1 bushel Rohan Potatoes,	3 00	
1-2 pound Sugar Beet seed,	50	
" " Carrot seed,	37	
1-4 " Mangel Wurtzel seed,	19	
4 casks of Lime, at 40c.	1 60	
35 bushels Ashes, at 6 1-2c.	1 95	
Hauling " from Lynn,	50	
Ruta Baga and Squash seed,	25	
Use of Horse and Cart,	20 00	—387 93
Balance in favor of meadow,		$314 89

with of course an increased value of the land, which is by good judges, considered in its present state, worth one hundred dollars per acre, which in addition to the crops taken off would give a net profit of seven hundred and fourteen dollars eighty-nine cents.

Respectfully your ob't. servant,

WILLIAM OSBORN.

Lynn, Dec. 14, 1839.

DANIEL PUTNAM'S STATEMENT.

To the Committee of the Essex Agricultural Society, on Reclaimed Meadow-Lands:

GENTLEMEN — The meadow which some of your number examined last summer, is supposed to meas-

ure something more than an acre and a half. In 1834 and in the previous years it yielded annually about one ton of meadow hay, fit only for litter. In 1835, a small piece was turned over with the hoe and planted with potatoes. Other parts were taken in succeeding years until the whole has been turned and planted. The potatoes have been manured in the hill and the yield has been 200 to 250 bushels per acre. Corn, beans, pumpkins, squashes, ruta bagas, and carrots have been tried in small patches, and *all* have done well.

The past season, the crops were as follows:

English Hay (Clover and Timothy,) on two thirds of an acre, 1 ton,	$15 00
Winter Rye, 1-2 an acre, 14 quarts seed, yield 12 1-2 bushels, at $1 25,	15 62½
Black Sea Wheat, 1-4 acre, 7 qts. seed, yield 4 bushels, at $1 75,	7 00
Chenango Potatoes, 30 poles, yield, 46 bushels, at 40 cents,	18 40
Sugar Beets, 20 poles, yield, 106 bushels, at 20 cents,	21 20
Second crop on Rye and Wheat stubbles, 25 cwt. at 50 cents,	12 50
	$89 72½

The wheat lodged badly and was cut while very green; the yield was less than if it had ripened well. Drills were opened with the hoe for the sugar beets, and a gravelly wash from the road side, mixed with wood ashes, was put into them. The dressing for 18 poles cost two dollars. On the remaining two poles the wash was mixed with bone; cost nearly two dol-

lars. The beets on the bone appeared to be a little and only a little larger than the others.

The whole meadow has been thoroughly ditched; the muck obtained paid for the labor. Each crop is believed to have paid for its expense as well as similar crops on the upland. It cost eight or nine dollars per acre to turn the meadow at first, and there was an expense of about five dollars in deepening the outlet of the waters. DANIEL PUTNAM.

Danvers, Dec. 23, 1839.

NOTE. Sickness and bereavement in the family prevented measurement both of the whole meadow and the several parts.

ON THE DAIRY.

The Committee on the Dairy submit the following REPORT:

They are unable to judge how the exhibition would compare with former years; but that further improvement may be made, there seemed but one opinion. The number of entries for premiums for June butter, were four. They award the premiums as follows: To Ebenezer Upton, of Danvers, the first premium of $8; to Jesse Putnam of Danvers, the second premium of $6; and the fourth of $4, to Isaac Carruth, of Andover. For the butter made from the 20th of May to the 20th of September, there were three entries. The premiums they award are as follows: To Joseph How, of Methuen, the first premium of $12; and the second of $8, to Mrs. Margaret Wardwell, of Andover. There were three entries of

Cheese. They award the premiums as follows: To R. Buttrick, on Col. Duncan's farm, Haverhill, the first premium of $10; and the second of $8, to Isaac Carruth, of Andover. The cheese was of good quality, and only needed to be further ripened and improved by age. As we have intimated above that improvements may be made in the quality as well as quantity of butter, it may be expected that we should point out some of the defects and suggest some improvements. In the first place, and as a subject of the first importance, the cows must be of the best quality. It is a truth that will, I judge, be readily admitted by those who have carefully examined, by preserving and churning the cream of each cow, in stock consisting of ten or twelve cows, separately, the difference in quantity will be from twenty-five to fifty per cent. and an equal if not greater difference in the appearance and quality of the butter.

There are some instances, (one of which has come to our knowledge,) of a cow, giving a good quantity of milk, from which no butter could be made. How many such cows there may be, we cannot say, but we are of opinion that every farmer should test the quality of each cow's milk, by churning her cream at different seasons of the year, separately. To have a good stock of cows he must raise his stock. And although we fully believe in the old proverb, "A good cow *may* have a bad calf," yet that we are more sure to have a good calf from good stock, I believe no practical farmer will doubt. Therefore, the best calves from the best cows should be raised and kept until their qualities can be fairly tested. The best

should then be selected and the others disposed of for beef or otherwise. The common period of a cow's usefulness for milk, is about ten years, some probably much longer. No first rate cow should be sold until the infirmities of age essentially impair her usefulness. In this way every farmer may have a stock of first rate cows at a moderate cost. Another fact to which allusion has often been made by writers on this subject, but which does not seem to us to have received sufficient attention, is to separate the butter from all fluid. It is attended with much more difficulty to separate oily substances from water or other like fluids when they have been intimately mixed than is usually conceived of. Butter should, therefore, be much more worked than it is. If butter could be made perfectly free from butter-milk, and properly salted with pure salt, in our opinion it might be preserved in a cool place for any space of time required. Another subject of much importance, is, that it be properly salted. For this purpose the salt must be pure and be in a very fine powder, that it may be intimately mixed, otherwise the butter will not have that uniform appearance so much to be desired, as the eye receives the first gratification when a fine looking lump of butter is placed on the table together with the smoking loaf. If the butter has the right shade of uniform yellow, it will much increase its sweet flavor. In connexion with the subject, we must enjoin cleanliness in every part of the process. The cow must have a clean and dry place to rest herself after the labors of the day in grazing for her food in dry pastures, fighting flies, &c. All vessels

used should be sweet and clean, the cream churned while pefectly sweet, and as sure as that two and two will ever make four, you will ever have good butter.

Which is respectfully submitted by

DEAN ROBINSON, Chairman.

JESSE PUTNAM'S STATEMENT.

To the Committee of the Essex Agricultural Society, on the Dairy:

GENTLEMEN — My engagements are such that I shall not be able to attend the meeting of the Society this day, but I send you a firkin of butter for premium. It was made in the month of June, in the following manner: The milk strained in tin pans, and kept as long as sweet, before the cream was taken off, which was put in tin pails and kept in the cellar; it was churned twice a week, and then the butter was salted, the butter milk that could be conveniently being then taken out; in twenty-four hours it was worked over, and again at the end of the same period of time, and put in the firkin, which was kept in the cellar until fall. The firkin contains about forty pounds, which when filled was put in the *well*, at the distance of twenty-one feet from the surface of the ground, and has there remained until last evening, when it was taken up.

The above statement is submitted by

JESSE PUTNAM.

Danvers, Sept. 20, 1839.

JOSEPH HOW'S STATEMENT.

To the Committee of the Essex Agricultural Society, on the Dairy :

Gentlemen — I present for your inspection two boxes of butter, containing 12 and 25 pounds, it being a sample of 415 pounds, made since the 20th of May (besides 550 pounds of cheese, made every day, the cream taken in the morning from the night's milk.) Our dairy has been somewhat irregular. I cannot state the average number of cows we have milked during the season, but think it would be equal to six new milk cows; including what has been used in the family of twelve persons. The cows have had no other feed but common pasture, excepting leaves of vegetables for the last two or three weeks. As to the method of making the butter there is nothing peculiar. The milk is kept in tin pans, stands in a cool place 36 hours, the cream is then taken off and churned twice a week, buttermilk well worked out, and salted to the taste.

Respectfully submitted.

Joseph How.

Methuen, Sept. 20, 1839.

R. BUTTRICK'S STATEMENT.

To the Committe of the Essex Agricultural Society, on the Dairy :

Gentlemen — Three cheeses, weighing eighty-seven and half pounds, are presented for your inspection, made on my farm in Haverhill, by Mrs. R. But-

trick. They are a sample of 31 cheeses, weighing 776 lbs., made from the first of July to the last of August. Six cows and two heifers, having common pasture feed only, were milked, and deducting the milk used in the family but little more than the produce of six cows was used for cheese.

Mrs. B.'s process of making is as follows: The milk at night is set by and the cream taken from it in the morning, and with a part of the milk warmed enough to make the whole as warm as milk fresh from the cow. The morning's milk is then put with it and the rennet, made by soaking a piece of rennet about the size of a cent in half a tea cup full of water, is strained into it. When the curd is sufficiently hard to be cut with a knife, it is cut up and suffered to stand till the whey rises, which is dipped off and the curd broke a little more and put in the basket to drain. It is then put into a tub and cut finer and about four quarts of boiling whey turned upon it. After lying ten or fifteen minutes, the curd is drained dry and carried to the cellar to stand till next day, when another curd prepared in the same way is put with the first. When the curd is entirely cold it is cut finer, and nearly a pint of fine salt and a tablespoon full of salt petre is mixed with it, and the curd is pressed. After pressing, the cheese is laid in a strong brine over night, to harden the outside. The cheeses are turned and rubbed with butter every day.

Mrs. R. Buttrick,

By J. H. Duncan.

Sept 26, 1839.

ON FRUITS AND VEGETABLES.

The Committee on Fruits and Vegetables would respectfully Report:

That the show of Fruits and Vegetables was imposing and highly creditable to the contributors; but owing to some mistake or neglect in not finding a convenient room to arrange them in a suitable manner, your committee found it extremely difficult to make a proper exhibition, and consequently visiters, as well as members of the Society, were disappointed in not being able to examine them. Your committee, however, trust that in future they shall not be obliged to arrange their articles in different buildings, as they were at Georgetown, which prevented their making such a report as they would have wished.

The exhibition of Apples was uncommonly good; among them were the Cloth of Gold or Drap d'or, Pickman Pippen, and seven other varieties. Seckel, Autumn Bergamot, Pound, and Iron Pears. Heath, Lemon, and an unnamed variety of Peaches. Portugal and Orange Quinces, from Andrew Dodge, Wenham. Osgood's Favorite, Mammoth Pippen, and five other varieties of Apples, from B. G. Metcalf, Salem. Monstrous Pippen (large and fine), President, and Boxford Stump Apple, from Peabody Russell, Boxford. Yellow Sweeting, Skinless (fine), and Beef-steak Apples, native Fox Grape, Williams's Bon Chretien or Bartlett Pears; these last were uncommonly fine, as were those from the same source last season, from Moses French, East Salisbury.

Fall Harvey, this is decidedly one of the finest Fall and early Winter Apples we possess; it is thought by Mr. Manning to have originated in this County; R. A. Merriam, Topsfield. A basket of Apples, marked 'Permain,' from a graft inserted in May, 1837; Dr. Bricket, of Newburyport. York Russet Apples; Wm. Boynton, Georgetown. Jalousie, Long Green, Naumkeag, and two other varieties of Pears; R. Manning, Salem. Pears and Seedling Peaches; Josiah Newhall, Lynnfield. Duchesse de Angouleme, Passe Colmar, and six other varieties of Pears, nearly all grown upon grafts inserted into Quince roots; Wellington and Michael Henry Pippen Apples; Cruger's Seedling (new), and Blue Imperatrice Plums; Lemon Clingstone and Freestone Peaches; John M. Ives, Salem. Basket of Isabella Grapes (unripe), as were most of this variety the past season; T. Souther, Ipswich. Four bouquets of garden and native Flowers; R. S. Ives, Salem.

With regard to the Vegetables offered (owing to their being placed inadvertently in different buildings, some may not have been properly entered.) The past season of 1839, was remarkable for its "Mammoth Squashes." Samuel Balch, of Georgetown, brought to the exhibition in a wagon, five large Lima or Valparaiso Squashes growing upon one vine to which they were then attached; they were the most remarkable growth of squashes exhibited. S. C. Thurlow, of West Newbury, sent in six of the African Blue Winter Squash, weighing nearly 200 pounds, which were produced from one seed. Very arge Hybrid Squashes from Gardner B. Perry, of

Bradford; Thos. Emerson, Topsfield; Perley Tapley, Danvers; and Wm. Ross, of Boxford. Marrow, Acorn, and Hybrid Squashes; Andrew Dodge, Wenham. Sugar Beet (from French seed), Rohan Potatoes; Josiah Newhall, Lynnfield. Large Rohan Potatoes, weighing 65 lbs. to the bushel; Dean Robinson, West Newbury. Large Blue Potatoes, said to be very productive; Andrew Dodge, Wenham. Dillingham, a new English variety, resembling the Chenango or Mercer; Butman's White, a fine but not productive variety, and the Rohan; these last were part of 440 lbs. which were produced from 11 lbs. of seed, raised in hills 3 feet apart, and 3 eyes in each hill; this Potatoe proves to be of a much better quality than was anticipated; they are a fine, yellow, *Yam*-tasted vegetable for the table; J. M. Ives, Salem. Eight-rowed Yellow Corn (very fine), from Wm. Williams, Rowley. Smaller variety, from Moses Pettengill, Topsfield. Mixed variety of Corn from D. Mighill, Georgetown. Early Dutton Corn, large and fine, and one of the varieties called 'Chinese,' from Wm. Osborn, Saugus. Dutton and early Sweet or Jefferson Corn; this variety is fine for table use; it comes in as early as the small Canada, and is quite as sweet as the old shrivelled variety; J. M. Ives, Salem. Mixed Brocoli, sent in without being labelled. Yellow, or Danvers Silver-skinned Onions, large and fine; R. T. Jaques, Newbury. St. Helena Potates; H. B. Spofford, Georgetown. Early Purple Fig, in a pot, containing the second crop of fruit (half grown) for the season, from Sarah Johnson, Andover. Skillman's Netted, Minorca, and Green-fleshed Melons, for the table; from J. M. Ives, Salem.

The Committee award the following gratuities:

To Andrew Dodge, J. B. Metcalf, Peabody Russell, Moses French, and Samuel Balch, 2 dollars each.

To Sarah Johnson, Dr. Bricket, W. Boynton, Dean Robinson, R. S. Ives, S. C. Thurlow, William Williams, and William Osborn, one dollar each.

John M. Ives, three dollars.*

Your Committee would repeat their recommendation which they made in their last report, that the farmers of the county, particularly those that forward us specimens of their products, would accompany them with an account or memoradum of the time and manner of sowing, the kind and quantity of manure, and the method taken to produce the crop.

At the time the Report was given at Georgetown, your Committee stated that there were many new facts, regarding the culture of Indian Corn and Potatoes. It has been asserted by some of the most practical farmers in this country, that the method of cutting off the stalks of corn while they are succulent, is contrary to all the principles of vegetable physiology; and although for the selling of the grain by measure the additional quantity received may not be equivalent to the value of the stalks for cattle feeding, still if the grain were sold by weight, as it should be, and as it is in all other countries, it would be found bad policy to cut or mutilate the stock while it contained sap or moisture; but while we should deprecate this method in corn, we should recommend the method long since practised in the old country with

* This gratuity was awarded by the committee, after the chairman had made his report.

the Potatoe, in taking off the flower buds before their full expansion, (the earlier the better.) The President of the Edinburgh Society, in his recent work on Agriculture, says, that an acre of potatoes thus served produced *one ton* more of tubers in weight, when thus managed. He remarks that a boy could very soon go over an acre and pick off all the flowers; and we would recommend (particularly with the late potatoes) that our Essex County farmers would try the experiment upon the Long Red variety; it is perfectly obvious that a plant or tree exhausts itself more in forming fruit, than in wood or leaves, and hence by taking from the vine that which goes to form its fruit, would send its juices to the nourishment of its root and stock.

For the Committee.

JOHN M. IVES.

ON CULTIVATION OF CROPS.

The Committee appointed to examine the several claims for premiums offered on Crops of Grain, &c. have attended to that duty, and REPORT:

That there were three claims for the premium on Indian Corn; one for that on Rye; two for that on Oats, and two for that on Barley. Some of the claimants did not prosecute their claims with sufficiently definite statements of their mode of cultivation.

After a careful examination of the several statements, they recommend the awarding of the following premiums and gratuities:

To Daniel Putnam, Esq., of Danvers, for his crop

of Indian Corn, being about eighty-seven and a half bushels to the acre, a premium of ten dollars. Mr. Putnam's statement is full, and will afford instruction to those who are desirous of information.

To William Williams, of Rowley, for his crop of Indian Corn, being about 85 bushels on one acre and fifty four rods, a gratuity of five dollars. This award is made not because the crop was large, but taking into view the known quality of Mr. Williams's soil, his efforts were thought worthy of encouragement. His statement is not sufficiently explicit to be published.

To Richard Jaques, of Newbury, for his crop of Oats, being sixty-seven bushels on land of ordinary quality, a premium of ten dollars.

To the Town of Danvers, for the crop of Rye raised under the management of Mr. Edmonds, by the labor of town paupers, a premium of ten dollars. Considering the known quality of the soil, and the condition it was in a very few years since, the committee have pleasure in thus expressing their approbation of the management.

There were two entries for the premium on Barley; one by Moses French of Salisbury, and one by Mrs. Elizabeth Parker, of Bradford. Mr. French raised 36 bushels of barley, of superior quality, on less than one acre of land. Mrs. Parker raised 31 1-4 bushels of barley on one half of an acre of land. Both of these crops were well cultivated. The committee award to each of the claimants a gratuity of five dollars, the quantity of land cultivated not warranting the award of the premiums offered.

Mr. F. J. Merriam, of Topsfield, submitted to the committee a statement of the cultivation of eight and a half bushels of black sea wheat, on 60 rods of land.

Mr. A. Sheldon, of Middleton, entered his field of Corn, but in consequence of the injury done to it by the wind, did not furnish a statement of the produce.

For the Committee.

DANIEL ADAMS, 3d, Chairman.

Dec. 31, 1839.

DANIEL PUTNAM'S STATEMENT.

To the Committee of the Essex Agricultural Society, on Grain Crops.

GENTLEMEN — I offer for premium a crop of Indian Corn, obtained, as you will learn from the accompanying certificates, from 168 poles of land, and measuring 92 bushels; at the rate of 87 bushels, 19 quarts, 1 pint, 2 1-2 gills per acre. It was an eight-rowed corn, large kernel, of reddish color. The soil on which it grew, was dark loam with gravelly subsoil. This land had been in grass for five years, and in 1838 yielded probably about one ton of hay. In November of '38, about one half of this was dressed with unfermented manure from the barn cellar, at the rate of about 4 cords per acre, and immediately broken up. In May, 1839, the remainder of the piece received a similar dressing and was immediately turned over. This latter portion was then rolled, and harrowed both lengthwise and across the furrows. The whole was furrowed or mark-

ed out for planting, so as to have the hills about three feet apart each way. The greater part of the piece received in the hill manure, a mixture from the barn cellar and the hog yard, that was in a state of active fermentation; this was applied at the rate of from 3 to 4 cords to the acre. One or two loads of compost from the barn yard, consisting of common soil, some droppings from the cattle, some ashes, a little salt and a little lime, were used. Also there was put in the hill one load of night soil mixed with meadow mud. The remainder, (from a fifth to a fourth of the whole piece,) had nothing put in the hill, but there was spread upon the furrow and harrowed in, a load or two of the mixture from the hog yard and the barn; also a load of meadow mud mixed with unleached wood ashes. From 7 to 10 kernels were put in each hill; no preparation of the seed. The corn came up well; was planted about the 10th of May; was thinned about the 20th of June, leaving five stalks in each hill; was harrowed each way, some of it three and some of it four times; was hoed as many times. The part that received the four hoeings was full of quack grass. In June and July the corn upon the night soil was far in advance of the other, while that where the manure was all spread fell much in the rear. About the 23d of September, the corn was all cut up, three hills laid together, and on the same and the following day was bound up with rye straw; was immediately put into stooks or shocks, containing each about eight bundles. On the 16th of October the husking was commenced, and was completed in about three days.

Then it appeared, (if the stooks were of uniform size, and we supposed them to be so,) that where the manure was *all spread*, there was more corn than on any other equal portion of the field. Where the compost from the barn yard was used, the corn was least; here, however, the soil was not as good as in the other parts. DANIEL PUTNAM.

Danvers, Dec, 23, 1839.

I measured the lot of land mentioned in this statement, while the corn was upon the same, and found it to contain one acre and eight poles.

JOHN W. PROCTOR.

This may certify that I saw the lot of corn entered for premium by Mr. Daniel Putnam, of Danvers, and referred to the Committee of the Essex Agricultural Society on Crops, measured, and witnessed the result to be as follows, viz:

No. 1, in the ear, measured 148 baskets, average weight per basket 42 lbs.; measure shelled, per basket 18 quarts; weight shelled, per basket, 30 lbs.

No. 2, in the ear, measured 20 baskets; average weight per basket, 39 1-2 lbs.

ABEL NICHOLS.

October 24th, 1839.

N. B. The second quality above named will probably measure shelled, about 14 quarts per basket.

RICHARD JAQUES'S STATEMENT.

To the Committee of the Essex Agricultural Society, on Cultivation of Crops:

Gentlemen — I submit the following statement of my method of raising a crop of Oats, on one acre of flat clayey pasture land, which never had been ploughed. The soil is about five inches deep, and so liable to be hove with the frost, that it has produced but very little grass. In 1838, it was ploughed in lands about thirty feet wide, that the dead furrow might be a drain to carry the water off; it was manured in the hills, with about three cords and a half of stable manure, and planted with potatoes, and it yielded about 90 bushels, it being a poor season for such land. The present season it was harrowed and then had spread on two hundred bushels of leached ashes, and then sowed with two and a half bushels of Oats and a peck and a half of Herds Grass seed, and then harrowed and rolled with a heavy roller; and produced sixty-seven bushels of Oats, weighing thirty-five pounds per bushel. R. Jaques.

Newbury, Sept. 26, 1839.

JOHN EDMONDS' STATEMENT.

To the Committee of the Essex Agricultural Society, on Crops:

Gentlemen — The crop of Rye, which was entered for premium, is situated on the Town Farm, in Danvers. The field contains three acres. The quality of the land is ordinary, yielding sorrel naturally.

In 1836 it was ploughed and planted with corn and potatoes; tolerably well manured, nothing extra. In 1837, it was sowed with Barley, with a few loads of manure spread; the greater part of the crop was sorrel. In 1838, it was again planted with corn and potatoes; it was decently well manured. After this crop was taken off, it was ploughed and the Rye was sown. In 1839, *seventy-seven* bushels of rye of superior quality was gathered from the field. It grew quite high, something more than five feet, and appeared uncommonly well in the field. The manure used was a compound from the barn yard, hog pen, and the collections from gutters, ditches, &c. &c. There was raised on the farm 31 bushels of Spring Rye also. There was raised also about 220 bushels of corn this season, and about 130 bushels of barley. There was nearly 400 loads of this compost manure made on the farm the last year. When this land was planted, there was put upon it about 11 loads to the acre. Considering the kind of soil, the crop of rye was thought to be very good.

JOHN EDMONDS.

ESSEX, ss. Jan. 9th, 1840.

Personally appeared, John Edmonds, the Superintendant of the Town Farm, in Danvers, and made oath that the facts stated in this communication are within his knowledge, and that the same are true.

Before me,

JOHN W. PROCTOR, Jus. Peace.

ELIZABETH PARKER'S STATEMENT.

To the Committee of the Essex Agricultural Society, on the Cultivation of Crops :

Gentlemen — I submit a statement by evidences that did the labor, of a crop of Barley raised the past season. The land which it grew on is a black moist loam joining a meadow. It was planted two years with corn, and manured as common in the hill. The first of May it was ploughed, but was so wet it was not sowed till the 22d ; then sowed 1 1-2 bushel of the two rowed Barley, that was bought at Salem. It grew finely until the heads began to show ; while it was tender it was beat down the 20th of July by a shower and wind, to rise no more. The 7th of August it was got up with a good deal of labor and put to dry one week, then got in ; from the 19th to the 24th thrashed, with a great quantity of straw, and winnowed up clean. The lot contained half an acre of land, and yielded 31 1-4 bushels of large sound grain.

Gentlemen, if you think this worthy of a place in your Essex Agricultural Society's Transactions, make use of it ; if not, pass it by.

Elizabeth Parker.

East Bradford, Sept. 24, 1839.

ON DOMESTIC MANUFACTURES.

The Committee on Domestic Manufactures, Report : That the number of entries exceeded those of any former year, and in several branches excelled in variety and skill of workmanship. In the short

time permitted for examination, and the crowded and contracted apartments appropriated to this part of the exhibition, it is hardly possible to do justice to all the claimants. If any have been passed by without award, or without notice, it must be attributed to any thing but a want of kind intention on the part of the committee. Our fair friends may be assured that we always consider that part of the exhibition, which is the work of their hands, as among the most interesting incidents of the day, and as emphatically entitled to favorable notice.

Among the articles exhibited were thirty-four hearth rugs, many of which discovered much industry and ingenuity. It was not possible to grant donations to all; but we have awarded a large number of gratuities, being willing to encourage those efforts that bring valuable products from materials of no value.

The specimens of lace and fancy work equalled those of any previous year. They reflected much credit on those who executed them, and gave a sure indication that our ladies have no occasion to summon the aid of foreign labor to ornament their persons.

The committee regret that the specimens of silk and of linens, were not so numerous as they sometimes have been. Both of these are well worthy the continued attention of this community.

The committee cannot but hope, that hereafter more spacious and convenient apartments will be appropriated to this part of the exhibition; and that there will be a general interest taken in bringing for-

ward all those articles of domestic industry worthy of exhibition. For the Committee.

I. PUTNAM PROCTOR.

Georgetown, Sept. 26, 1839.

The following premiums and gratuities were awarded:

For the best piece yard wide carpeting, to Mrs. Elizabeth Barker, of Andover, 1st prem. $5 00

To Mrs. Hannah J. Fennimore, of Newburyport, 2d premium, 3 00

" Mrs. Peggy Tenney, of East Bradford, aged 84 years, for the best straw or grass bonnet, 2d premium, 3 00

HEARTH RUGS.

To Mrs. Isaac Stanwood, of Ipswich, first premium, 3 00

" Mrs. Stephen C. Thurlow, of W. Newbury, 2d premium, 2 00

" Mrs. Benj. Oliver, of Lynn, a gratuity, 2 00

" Miss Elizabeth A. Colby, Salisbury, " 1 00

" " Ann Wood, Andover, " 1 00

" " Juliett C. Varina, Newburyport, " 1 00

" " Ann Edwards, Wenham, " 1 00

" Mrs. C. Tappan, Newbury, " 1 00

" Miss Martha Conant, Beverly, " 1 00

" Mrs. W. S. Annis, Methuen, " 1 00

" " Sarah Lunt, Newbury, " 1 00

" " Mary P. Bollman, Newbury, " 1 00

" " Caroline Lane, Newbury, " 1 00

For the best piece of woolen cloth, to Susan Swan, of Andover, a gratuity, 1 00

To Ballard Vale Manufacturing Company, Andover, for the best specimen of flannel, 1st prem. $4 00
For the best specimen of woolen hose, to Mary S. Carlton of Andover, 1st premium, 2 00
To Mrs. Asa Abbot, of Andover, for woolen hose, 2d premium. 2 00
For the best sample of men's half hose, to Mrs. Ruth Munroe, Danvers, 1st prem., 1 00
For best linen hose, to Mrs. J. Hewes, of Haverhill, a gratuity 1 00
To E. A. Cleaveland, of Byfield, for linen hose, a gratuity, 50
To Mrs. Theron Johnson, of Andover, for the best wrought counterpane, 1st premium, 4 00
To Mrs. A. M. Caldwell, Byfield, for second best, 2d premium, 2 00
For the best wrought lace, to Miss E. P. Whittredge, Beverly, 1st premium, 3 00
To Miss S. A. Abbot, of Andover, for lace veil, 2d premium, 2 00
" Miss Lucy S. Adams, of Beverly, for lace veil, gratuity, 1 00
" Miss M. Gerrish, of Newbury, for wrought cape and collar, gratuity, 1 00
" Miss Caroline E. Bradstreet, Newbury'pt, for same articles, a gratuity 1 00
" Mrs. Isabella Lefavour, of Beverly, for the best specimen of work, under 12 years of age, being bag and lamp stand, 1st prem. 3 00
" Miss Adeline Dodge, Wenham, for work under 12 years of age, being a wrought sampler, 2d premium, 2 00

The following gratuities were awarded:

To Miss Hannah Whittredge, Beverly, for lamp stand,	$1 00
Miss Lucy J. Mosely, Newburyport, for do.	1 00
Eunice Kilham, Boxford, for linen thread,	50
Miss H. Whittredge, Beverly, for bead work,	1 00
To George Dawson, Ipswich, for two pair of French boots,	1 00
" Sarah Sargent, of Amesbury, for wrought table cover,	1 00
" Col. John Kimball, Georgetown, for specimens of dressed leather,	2 00
" Benjamin Mac Laughlin, Georgetown, for the same article,	1 00
" Ira S. Tyler, Georgetown, for the same,	1 00
" Mrs. Mary M. Merrill, Newbury, for specimens of coloring,	1 00
" Mrs. Hannah Carlton, Andovor, for four pair mittens,	50
" Miss Margaret Wardwell, of Andover, for two dozen neck stocks,	1 00
" Miss B. G. Phillips and sisters, Andover, for specimens of silk cocoons,	1 00
" Abiah Lovejoy, of Andover, (blind from birth,) for specimens of fancy articles neatly wrought,	3 00
" Miss Harriet F. Perkins, Essex, for wro't counterpane,	1 00
" Moses C. Tappan, Newbury, for rug stair carpet.	1 00
" Sarah Lunt, Newbury, for rag carpet,	1 00

To Mrs. Joseph Bradley, North Andover, for yard wide carpeting, $1 00
" Thomas Carpenter, Bradford, for screw plate and dies, 3 00
" T. Milton Morse, Bradford, for child's carriage, wrought by him, 3 00
" Edwin J. Colby, Salisbury, for basket made from cocoa nut, with a pen knife, 1 00
" Nabby Kilham, Boxford, for woolen yarn, 50
" S. Smith, Georgetown, for knit hose, 50
" Hannah Wardwell, Andover, for cricket cover, 1 00
" Abby H. Putnam, Danvers, aged 5 years, for needle work, 50
" Mrs. Sally P. Nelson, of Georgetown, for hose and yarn, 1 00

ON PLOUGHING WITH DOUBLE TEAMS.

The Committee on Ploughing with Double Teams, REPORT: That ten teams were entered; eight only ploughed, viz: Jedediah H. Barker, of Andover, Perley Tapley, of Danvers, John J. Foster, Andover, Daniel Moulton, of West Newbury, Harrison Spofford, of Georgetown, Israel Adams, of Boxford, Joseph C. Putnam, of Danvers, William Williams, of Rowley.

A field on Spofford's Hill had been previously selected, and lots of one sixth of an acre had been

marked out and numbered, and were drawn as follows, viz:

Lot No. 1, drawn by Isaac Adams; used Prouty & Mears' patent plough; ploughed 24 furrows in 49 minutes.

Lot No. 2, drawn by John J. Foster; used Winslow's patent plough; ploughed 22 furrows in 53 minutes.

Lot No. 3, Drawn by Perley Tapley; used Howard's patent plough; ploughed 22 furrows in forty minutes.

Lot No. 4, drawn by Daniel Moulton; used Ruggles & Nourse's patent plough; ploughed 22 furrows in 45 minutes.

Lot No. 5, drawn by William Williams; used Ruggles & Nourse's patent plough; ploughed 22 furrows in 52 minutes.

Lot No. 6, drawn by Jedediah H. Barker; used Prouty and Mears' patent plough; ploughed 22 furrows in 43 minutes.

Lot No. 7, drawn by Joseph C. Putnam; used Winslow's patent plough; ploughed 23 furrows in 45 minutes.

Lot No. 8, drawn by Harrison Spofford; used Emerson's wooden mould board plough; ploughed 20 furrows in 33 minutes.

The field had been laid down to grass for several years. The sward was rather tough and hard; the soil was a gravelly loam, and some fast stones were scattered over the lot. Under all the circumstances, the committee are of opinion that the ploughing was better than in former years.

After a careful examination of the work at the time of ploughing, and also of the teams, and a view of the several lots after the teams had left, the committee were unanimous in awarding the first premium of twelve dollars, to Daniel Moulton, of West Newbury. The second premium of ten dollars to Jedediah H. Barker, of Andover. The third premium of eight dollars, to John J. Foster, of Andover, and the fourth premium of six dollars, to Perley Tapley, of Danvers.

The team of Harrison Spofford, of Georgetown, worked remarkably well and the plough was held by a skillful ploughman, and had the plough been of good construction, he would have been a fair candidate for premium.

After determining to whom the several premiums offered by the Society should be awarded, the committee made a particular examination as to the comparison of the work done by the different ploughs used. We are of opinion that the Winslow plough lays the furrow the flattest, and this is considered an object of importance in turning over grass lands; more especially when grass lands are not ploughed until the spring of the year. From the specimens of ploughing with Nourse's plough, the furrows were laid even and well, but not so flat as the Winslow plough. The Prouty & Mears' plough appeared to be drawn with the least expense of labor, and laid the furrows as well in all respects as the Winslow plough. For the Committee.

MOSES NEWELL.

Georgetown, Sept. 26, 1839.

ON PLOUGHING WITH SINGLE TEAMS.

The Committee on Ploughing with Single Teams, Report as follows:

There were five entries but only four teams appeared. Lot No. 1, was drawn by Perley Tapley, of Danvers. Lot No. 2, by Rufus Knight, of Danvers. Lot No. 3, by John J. Foster, of Andover. No. 4, by William Long of Andover.

Your committee were unanimous in awarding the first premium of ten dollars to Perley Tapley, of Danvers; the work was performed in 40 minutes, of 19 furrows; oxen well trained and ploughing very well done.

Rufus Knight, of Danvers, is entitled to the 2d Premium of 8 dollars; work was performed in 37 minutes, of 17 furrows, well done.

Lot No. 3, ploughed by John J. Foster, in the opinion of your committee is not entitled to any premium.

Lot No. 4, ploughed by William Long, of Andover; work done in 50 minutes, of 19 furrows; your committee award the 4th premium of four dollars.

Per order of the Committee.

HENRY OSGOOD, Chairman.

Georgetown, Sept. 26, 1839.

ON PLOUGHING. — HORSE TEAMS.

The Committee on Ploughing with Horse Teams, ask leave to report, that but two teams were entered

for premium; David Wilkins, of Danvers, and William Whittier, of Danvers; that the work was performed in a workmanlike manner.

They recommend that the first premium of eight dollars be paid to David Wilkins, of Danvers; and the second premium of six dollars be paid to William Whittier, of Danvers. For the Committee.

A. A. ABBOT.

Georgetown, Sept. 26, 1839.

ON WORKING OXEN.

The Committee on Working Oxen, respectfully Report: That they have examined twelve pair of oxen, and witnessed their drawing, all of which performed the work well, and were, generally, well trained; and that the drawing and discipline of most of the teams were so nearly equal for goodness, that your committee have found it difficult to select those which should have the preference. They have, however, concluded, after having considered the subject as well as they have been able, in the short time they have had for that purpose, to recommend that the first premium of ten dollars be awarded to Perley Tapley, of Danvers, for his red oxen, six years old; the second of seven dollars, to Joseph C. Putnam, of Danvers, for his red oxen, six years old; and the third of five dollars, to Jedediah H. Barker, of Andover, for a pair of Steers, 4 years old.

For the Committee,

ASA T. NEWHALL.

Sept. 26, 1839.

ON BULLS.

The Committee on Bulls having attended to that duty, make the following REPORT: There were eight animals of that description exhibited:—

One by William Brown, of Bradford, 18 months old,
" Wm. H. Moody, of W. Newbury, 16 " "
" Jeremiah Bartlet, of " " 15 " "
" Richard Stuart, of Haverhill, 17 " "
" Geo. Spofford of Georgetown, 15 " "
" Job Abbot, of Andover, 17 " "
" Isaac W. Andrews, Boxford, 18 " "
" Charles Nelson, Georgetown, 18 " "

The Committee are unanimous in recommending the first premium to Isaac W. Andrews, of Boxford, of ten dollars; the second premium to Richard Stuart, of Haverhill, five dollars.

Submitted for the Committee, by
WILLIAM D. S. CHASE.

Georgetown, Sept. 26, 1839.

ON FAT CATTLE.

The Committee on Fat Cattle have attended to that duty and ask leave to REPORT:

That the whole number of fat cattle entered for premium was six oxen, two of which were of good quality, and in the opinion of the committee, were entitled to premiums, and they accordingly recommend that Col. Jeremiah Colman, of Newburyport,

receive the first premium of $15, for his off ox; and that Peabody Russell, of Boxford, receive the second premium of $10, for his off ox. All of which is respectfully submitted.

AMOS SHELDEN,
BENJAMIN WHEELER,
OLIVER EMERSON,
ANDREW DODGE,
} *Committee.*

Georgetown, Sept. 26, 1839.

ON STEERS AND CALVES.

The Committee appointed for the examination of Steers and Calves presented for premium the present year, consisting of Amos Kimball, Richard Ayer, David Mighill, Otis Bailey, and Sam'l. Day, REPORT:

There were a variety of fine young creatures presented, which gives flattering evidence that an increased attention has been paid to the rearing of young stock, which subject is thought to have been too much and too long neglected in this County where so large a proportion of the land is fit only for pasturing. Some difference of opinion arose among the committee, respecting the best method of rearing calves;—whether they should be kept in the stable on hay, &c. and water, until a year old, or at the age of two or three months be turned to pasture. We were not agreed, and have left the matter for further investigation.

Among such a number of fine young creatures as were exhibited, the Committee had no little difficulty in deciding as to awarding premiums. They at last,

however, came unanimously to the following conclusion, viz :—

That Oliver Peabody, of Boxford, be awarded for the best pair of 2 year old steers, the sum of $6 00

To Jedediah H. Barker, for his 2 yr. old steers, 4 00

" John F. Carlton, for his yearling " 4 00

" Josiah Titcomb, for his yearling steers, second premium, } 2 00

" David Caldwell, for his bull calf, 1st prem., 3 00

" Wm. H. Moody, for his " 2d " 2 00

" Job Abbot, for his twin steers, 3 00

" Wm. H. Moody, for his best heifer calf, 3 00

" Ebenezer Upton, for second best " 2 00

Only one pair of three year old steers were presented for premium, and them by Jedediah H. Barker. They were well formed steers, and probably well trained, and of fair size, but apparently not well mated.

An extra calf, for size, was presented by Edmund Barker, of Andover, but the committee were of opinion, that considering the expense of raising him, and his overgrown appearance, the rearing of such calves might as well not be encouraged by the Society's premiums at present. Per order of the Committee.

AMOS KIMBALL.

Georgetown, Sept. 26, 1839.

ON SWINE.

The following pigs were offered for premium:

By George Spofford, 2 Chinese pigs, 15 weeks old; very good of the kind.

By Willliam Marland, of Andover, 1 pair Berkshire pigs, 3 months and 21 days.

A. Durant, of Methuen, 1 sow and 5 pigs, part Mackey and part Berkshire, 2 months old; 1 Berkshire boar, 5 months old; 1 boar, part Berkshire and part Mackey.

J. L. Noyes of Georgetown, 1 boar 16 weeks old.

John C. Farnham, Andover, 1 boar pig, 4 months and 16 days old.

William Pecker, of Haverhill, 1 sow,17 months, 7 pigs, 14 weeks old.

William Williams, 1 sow and six pigs, four months and ten days old.

George W. Rugg, 3 Berkshire pigs, 2 of them four months and 18 days old.

John Hale, Boxford, 1 boar pig 4 months old.

Harrison B. Spofford, Georgetown, 6 pigs four months and 2 days, old.

Abram Adams, 1 sow and 9 pigs, 21 days, 1 boar pig, 17 weeks.

John B. Savory, Georgetown, 6 fat hogs.

Perley Tapley, Danvers, 2 fat hogs.

Jacob F. Jewett, of Georgetown, 2 pigs, 1 seven months, 1,14 weeks.

Your Committee award to Adolphus Durant for his Berkshire boar, five months, the first premium.

To John Hale, for his boar pig, 4 months, the second.

To Adolphus Durant, the first premium for the best breeding sow.

To William Williams, the second premium for his breeding sow.

To William Williams for his six pigs, four months and two days, the first premium.

Harrison B. Spofford for his 6 pigs, four months and two days, the second premium.

The 2 hogs of Mr. Tapley were very fine.

The Committee would have given other premiums if it had been in their power, as most of the others were very fine. For the Committee,

EDMUND KNIGHT.

September, 1839.

ON HORSES.

The Committee on horses having attended to the duty assigned them, beg leave to REPORT :

That twelve horses were entered for the Society's premium, viz :

By Elbridge Stiles, of Middleton, a bay colt, three years old in June last.

John Brown of Boxford, a sorrel colt, unaccompanied by a written statement.

Willard Putnam of Danvers, a colt five years old.

William Tucker of Andover, a chestnut colt, also without a statement in writing as required by the rules of the Society.

William Brown of Danvers, a dark bay colt, five years old.

William S. Marland of Andover, two colts, one four, and the the other three years old.

Abel Nichols of Danvers, a colt four years old.

William G. Lake of Topsfield, a three years old grey colt.

John Northend of Byfield, a grey colt five years old.

Amos N. Follensby of West Newbury, a colt of four years.

On no similar occasion, have the committee witnessed a finer exhibition of horses. Three of them having been raised without the limits of the County, were excluded from their consideration.

After having inspected them, and observed their movement, the committee award to John Northend of Byfield, for his grey colt of five years old, the first premium of twenty dollars.

To William Brown of Danvers, for his dark bay or chestnut colt, the second premium of ten dollars.

For the Committee.

Sept. 26, 1839. JOSIAH NEWHALL.

To the Committee on Horses.

GENTLEMEN,—The mare entered for premium by the subscriber was raised by him,—was born in the year 1834, and is now 5 years old. Her keeping has always been very ordinary. In the summer, she has been in a common pasture; without having any access to better feed in the fields in autumn. During winter season, she has had nothing but common hay, and has never had grain of any kind as a portion of her food. Very respectfully,

Byfield, Sept. 1839. JOHN NORTHEND.

To the Committee of the Essex Agricultural Society on Horses.

GENTLEMEN,—The colt presented by me this day for premium, was four years old in June last; was raised by me, and broke to the harness when eighteen months old, and is perfectly kind in carriage or team; both of which he has been accustomed to work in; he weighed when three years old, nine hundred and thirty-three lbs.; his colour is chestnut or dark bay; should you wish for any further information respecting him, I shall be on the ground, and will willingly give it.

WILLIAM BROWN.

Danvers, Sept. 26, 1839.

ON FOREST TREES.

The Committee on Forest Trees, REPORT:

That although liberal premiums for the cultivation of Forest-Trees, have been offered by the society from its organization to the present time, no claim for those premiums has within the knowledge of the Committee, been presented until the present year. Perhaps the subject has not engaged the attention of the farmer, or the benefits have seemed too remote, or the experiments made, have not been so extensive as required by the rules of the society; but whatever cause may have hitherto prevented at-

tempts to cultivate Forest-trees, your Committee think that at no very distant day, the increased price of fuel and the diminished stock of timber, will awaken attention to supply the deficiency of both. Already the planting of trees by the road-sides, for ornament and shade is becoming more frequent, and thousands might yet be planted, which would beautify our County, and in a few years add greatly to the stock of fuel.

This article is one of the heavy items of expense to every family, and every addition to the sources of supply tends to keep down its price. How many tracts of land there are throughout the county, of little value for other purposes, which might be profitably devoted to the cultivation of trees! How many beautiful hills, long since divested of their primitive forest growth, and from which more recently the high price of ship-timber, has stripped the few remaining oaks, until they now stand bleak and bare, exhibiting the aspect of sterility however good the soil, without shade or shelter for the cattle under our summer suns! And how obviously would rows of trees by the fences and clumps scattered over these hills, heighten the beauty of the landscape, afford a grateful shade to animals and augment the value of the land! The value of the trees which might now be planted in the county, would, thirty years hence, without materially diminishing the income of the land, be almost invaluable.

Mr Nathan Webster of Haverhill, is the first and only claimant for this premium. He commenced

planting the seed of the locust in October, 1835, and not discouraged by the failure of most of the seed to germinate, or the destruction of the young plants by the winter of 1836–7, has continued to plant extensively the seeds of the locust, ash, elm, also walnuts and chesnuts, to the present time, until the larger part of about nine acres of land has been planted; generally in furrows ten feet apart. But few of the walnuts came up, and of a bushel of acorns planted in the fall of 1837, not one germinated, owing, as he supposes, to having been injured by frost before planting. Mr. Webster has found it necessary to soak locust seed from twelve to twenty hours in hot water before planting, to insure their germinating. He also showed the committee a promising nursery of ash trees, sown in his garden the last fall, and another of elms from twelve to eighteen inches high, which were planted in June from seed the growth of the present year. The committee visited his plantation on the twentieth September instant. The soil is dry and gravelly, and the land in 1835 was mostly covered with white birch and some white oak and maple trees. Previously to planting trees, only one acre of the field had been ploughed. The seed was dropped in furrows made with the plough in the sward, at ten feet distance, and covered with the hoe. Mr. W. exhibited to the committee a considerable number of ash and buttonwood trees in a thrifty state, which he had transplanted, some of the latter were growing thrifty from slips set in the wettest part of the land. But the attention of your committee was particularly directed

to the locust trees, of which Mr. Webster estimated that from five to six thousand were in the fourth year, and from three to four thousand in the third year of their growth. The seed having been dropped without manure in furrows from which the soil was removed by the plough, the trees could not be expected to have had a rapid growth, and were almost universally injured by the borer, which is so peculiarly destructive to the locust tree. They were slightly hoed the first year, but had received no cultivation since, and the white birch and other trees were begining to assert their claims to the soil. Cattle are entirely excluded from the field by a very substantial wall. Your committee think Mr. Webster entitled to commendation for his extensive and spirited experiments in planting trees; and although they wish his cultivation had been more exact and thorough, and the present appearance of the plantation cleaner and more promising, yet considering the variety and extent of his experiments, and the importance of the subject, they recommend that he receive the first premium of thirty dollars.

In behalf of the Committee.

J. H. DUNCAN.

September, 1839.

NATHAN WEBSTER'S STATEMENT.

To the Committee of the Essex Agricultural Society on Forest Trees:

GENTLEMEN—The lot of Locust trees which I have offered for the premium of the Essex Agricultural Society, is planted in Haverhill, about one mile

east of the village. The land, between nine and ten acres, was in 1835 mostly covered with white birches, with some white oak and maple trees. The land is light gravelly loam, the bushes and trees I had cut and about one acre of the land ploughed and planted with potatoes, and in October, 1835, I sowed one pound of locust seed, but very few came up. In May, 1836, I had one acre of land furrowed in furrows ten feet apart, and in these furrows sowed two pounds of locust seed, and think that more than ten thousand trees came up. These were hoed once the first year but in the following winter more than three fourths were killed. In the spring of 1837, sowed one pound of Locust seed, on two acres of land, in rows about ten feet apart; the seed came up well, the plants were slightly hoed the first year, the first winter killed more than half of them. In the fall of 1837, I planted between one and two bushels of white oak acorns in rows ten feet apart, made by ploughing a furrow, but from these acorns not a single tree came up. I presume the early frost of that year killed the acorns before they were ripe. In 1838, sowed one pound of locust seed which came up well. I pour hot water on the locust seed, let it remain twelve or twenty hours in the same water; but few locust seeds will germinate if not soaked in hot water. I presume there are now on the nine or ten acres of land, in the fourth year of their growth, from five to six thousand trees, and in the third year from three to four thousand trees. Where they were too thick, I transplanted them, and they now cover eight or nine acres. They have been very extensively attack-

ed by the borer, which has very much injured their appearance and growth. There has not been any labor bestowed on them since the first year.

Yours very respectfully,

NATHAN WEBSTER.

ON MULBERRY TREES.

MISSES PHILLIPS'S STATEMENT.

To the Committee of the Essex Agricultural Society, on Mulberry Trees:

GENTLEMEN — We offer for premium a nursery of trees raised from seed, and now consisting of about 750 flourishing plants. "The seed was the species called "Canton," and given us by a gentleman who brought it from China. Part of this seed was planted in May, 1838; of this, one lot is now more flourishing than the other. Two hundred and fifty of these plants were transplanted to a richer soil in the spring of 1839, and are now from 3 to 5 feet high, and covered with a fine, rich foliage, besides having afforded much produce for the feeding of worms the present season. Three hundred plants of the same lot were transplanted to a more exposed situation, and a less rich soil, and have not flourished so well, but still are in a fine, sound and thrifty condition. Of the seeds planted the present season, we have two hundred young trees, from 1 1-2 to three feet high, well covered with a fine broad leaf, and very flourishing. The nursery of White Mulberry, for which your Committee last year awarded us the first pre-

mium, is also in a flourishing and healthy condition, and has afforded us sufficient foliage for feeding rising 12,000 worms, with a little assistance from the young plants above mentioned. During the past winter, we preserved the trees by covering them with tan. Our nursery of white mulberry was left entirely exposed, and received no injury.

Our object has been to raise trees by a steady growth, for the particular object of feeding the worm and making the silk, and thus far we have succeeded to our entire satisfaction.

North Andover, Oct. 28, 1839.

The Committee on the cultivation of Mulberry Trees, finding the statement of Miss R. Phillips and sisters to be correct, are of opinion that they are entitled to a premium of ten dollars, which sum they unanimously recommend to be granted them by the Essex County Agricultural Society.

Signed in behalf of the Committee.

G. B. PERRY.

The foregoing statement of the Misses Phillips, together with the opinion of the Committee, came to hand too late to be submitted to the Trustees at their meeting in December. But as it contains interesting information on a subject but imperfectly understood, and exhibits a degree of success in cultivation, not known to be equalled in any other part of the County, I have thought it should be published; and have no doubt the Trustees, when they meet, will be pleased to do justice to the enterprising cultivators.

JOHN W. PROCTOR.

January, 1840.

Dr. *Essex Agricultural Society, in Account with Andrew Nichols, Treasurer.* *Cr.*

1839.			1839.		
	Paid Premiums awarded in 1838,	250 00	Jan. 1.	By Balance of Account stated,	$399 31
	Paid " " 1839,	199 50	April.	By Dividends on Bank Stock,	163 00
	Paid Bills which accrued in 1838,	242 60	October.	By " " "	166 00
	Funded C. Derby's and J. Osgood's note,	160 00		By Cash received of Simeon Pearl, Joseph Holt, D. & J. Pulsifer, for membership,	12 00
	Advanced to Hon. Eben. Mosely to pay premiums in Newburyport and vicinity,	61 50		By Interest on B. Goodridge's Note, 2 years,	11 52
		913 60		By Interest and Principal of Derby's Note,	59 48
Dec. 30.	Balance in the Treasury,	497 71	Dec. 30.	By State's Bounty,	600 00
		$1411 31			$1411, 31

N. B. The funds are invested as stated last year, with the addition of Charles Derby's Note for one hundred and ten dollars.

ANDREW NICHOLS, *Treasurer.*

DECEMBER 30, 1839. We have examined the foregoing account, and find it correctly vouched and accurately cast.

DANIEL P. KING,
ROBERT S. DANIELS. } *Auditors.*

DECEMBER 31, 1839. The foregoing statement was ordered to be published by the Trustees. JOHN W. PROCTOR, *Sec'ry.*

A LIST OF

PREMIUMS AND GRATUITIES,

AWARDED IN 1839.

To Eben Upton,	*Danvers*,	For Butter,	1st prem.	$8
" Jesse Putnam,	"	"	2d "	6
" Isaac Carruth,	*Andover*,	"	3d "	4
" Joseph Howe,	*Methuen*,	"	1st "	12
" Margaret Wardwell,	*Andover*,	"	2d "	8
" Mrs. R. Buttrick,	*Haverhill*,	For Cheese,	1st "	10
" Isaac Carruth,	*Andover*,	"	2d "	8—56
" John Keely,	*Haverhill*,	Green Crops,	gratuity,	10
" Nathan Webster,	"	Forest Trees,	1st prem.	30
" William Osborn, jr.	*Lynn*,	Meadow Lands,	1st "	20
" Daniel Putnam,	*Danvers*,	"	2d "	10—30
" Daniel Moulton,	*W. Newbury*,	Ploughing, D. T.	1st "	12
" Jedediah H. Barker,	*Andover*,	"	2d "	10
" John I. Foster,	"	"	3d "	8
" Perley Tapley,	*Danvers*,	"	4th "	6
" " "	"	Ploughing, S. T.	1st "	10
" Rufus Knights,	"	"	2d "	8
" William Long,	*Andover*,	"	4th "	4
" David Wilkins,	*Danvers*,	Ploughing, Horse T.	1st "	8
" William Whittier,	"	"	2d "	6—72
" Andrew Nichols,	"	Exp'ts. on Manures,	1st "	20
" Daniel Putnam	"	Crop of Corn,	1st "	10
" William Williams,	*Rowley*,	"	gratuity,	5
" Richard Jaques,	*Newbury*,	Crop of Oats,	1st "	10
" Moses French,	*Salisbury*,	" of Barley,	gratuity,	5
" Elizabeth Parker,	*Bradford*,	" "	"	5
" Town of Danvers,		" of Rye,	1st prem.	10—45
				$263

			Brought over,	$263
" Jeremiah Colman,	*Newburyport*,	For Fat Cattle,	1st "	15
" Peabody Russell,	*Boxfoed*,	"	2d "	10
" Isaac W. Andrews,	"	For Bull,	1st "	10
" Richard Stewart,	*Haverhill*,	"	2d "	5—40
" Franklin Bartlett,	*Newburyport*,	Milch Cow,	1st "	10
" Nathan Tapley,	*Danvers*,	"	2d "	7
" George Spofford,	*Georgetown*,	"	3d "	5
" Joseph Danforth,	*W. Newbury*,	For his Heifer,	1st "	7
" Eben Upton,	*Danvers*,	" "	1st "	3
" Parker M. Dole,	*Newburyport*,	" "	2d "	2—34
" Perley Tapley,	*Danvers*,	Working Oxen,	1st "	10
" Joseph C. Putnam,	"	" "	2d "	7
" Jedediah H. Barker,	*Andover*,	" '	3d "	5
" Oliver Peabody,	*Boxford*,	Steers,	1st "	6
" Jedediah H. Barker,	*Andover*,	"	2d "	4
" John F. Carlton,	"	"	1st "	4
" Josiah Titcomb,	*Byfield*,	"	2d "	2—38
" David Caldwell,	"	Calves,	1st "	3
" William H. Moody,	*W. Newbury*,	"	2d "	2
" Job Abbot,	*Andover*,	Twin Calves,	gratuity,	3
" William H. Moody,	*W. Newbury*,	Calves,	1st prem.	3
" Eben Upton,	*Danvers*,	"	2d "	2—13
" Adolphus Durant,	*Methuen*,	Swine. Boar,	1st "	5
" John Hale,	*Boxford*,	" "	2d "	2
" Adolphus Durant,	*Methuen*,	" Sow,	1st "	5
" William Williams,	*Rowley*,	" Boar,	2d "	3
" " "	"	" Pigs,	1st "	6
" H. B. Spofford,	*Georgetown*,	" "	2d "	3—24
" John Northend,	*Byfield*,	Horse,	1st "	20
" William Brown,	*Danvers*,	"	2d "	10—30
By the Committee on Fruits, &c. See page 79,				21
By the Committee on Domestic Manufactures; see pages 89—92,				91
				$554

PREMIUMS OFFERED

BY THE

ESSEX AGRICULTURAL SOCIETY.

1840.

At a meeting of the Board of Trustees, December 31st, 1839, the following orders were passed, and the Secretary was directed to prepare a list of premiums, in conformity thereto, which will be published on a sheet, previous to the Exhibition, which is to be at Georgetown, on *Wednesday*, Sept. 30, 1840.

On *Farms*, to be reduced 50 per cent. from the last year — same Committees and Regulations continued.

On *Dairy*. First and third class the same; 2d class $10 and $8.

On *Green Crops as a Manure* — the same as last year.

On *Forest Trees* — the same.

On *Mulberry Trees, Silk, &c.* — $60 00 to be offered.

On *Irrigation* — the same.

On *Wet Meadows* — the same. Only two years cultivation to be stated.

On *Ploughing* — the same; with new conditions and restrictions.

On *Agricultural Implements* — the same.

On *Crops* — the same.

On *Experiments on Manures* — the same.

On *Fattening Cattle* — the same.

On *Teams of Oxen* — the same.

On *Animals exhibited* — the same in amount, with some variations.

On *Domestic Manufactures*, — the same.

On *Fruits and Flowers* — the same.

On *Live Fences* — the same.

The premiums for *Horses*, are not continued the present year.

The premiums for *Calves*, are not continued.

The premiums for *Working Oxen* are limited to those not exceeding eight years old.

There is reason to believe that the Trustees will be able to offer additional premiums on Stock, by the aid of the Massachusetts Society, but we are not fully advised on this point.

Attest. JOHN W. PROCTOR, *Secretary.*

March, 1840.

NAMES OF MEMBERS ADMITTED,

In 1839.

JOSHUA L. NEWHALL, *of Newbury.*
WILLIAM BROWN, *of Danvers.*
JOHN C. FARNUM, *of Andover.*
WILLIAM OSBORN, *of Lynn.*
CHRISTOPHER HOWE, *of Methuen.*
BENJAMIN SCOTT, *of Ipswich.*
DAVID PULSIFER, *of Salem.*
J. PULSIFER, *of* "
SIMEON PEARL, *of Boxford,*
JOSEPH HOLT, *of Andover.*

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By the favor of the Agricultural Commissioner, who has heretofore done so much for the benefit of the farmers of Essex, I am permitted to include in our annual pamphlet, his report of the remarks of Messrs. WEBSTER and SILLIMAN, at the Agricultural Meeting, in Boston. Knowing that there could be no higher sources of information, I have thought it would be useful and gratifying to the members of the Society, to be thus instructed.

JOHN W. PROCTOR.

March 11, 1840.

AGRICULTURAL MEETING.

The Commissioner of Agricultural Survey, having obtained, by a vote of the House, the Representatives' chamber for the purpose, invited a meeting of the members of the Government and others interested in Agriculture to be held on the evening of the 13th January, 1840.

The meeting was very fully attended. The Hon. Leavitt Thaxter, of Edgartown, Dukes Co., member of the Council, was called to the chair. He briefly expressed the pleasure he felt in being present on this occasion; and his respectful acknowledgements of what he deemed a high honor, that of being called to preside at a meeting of the farmers of Massachusetts.

The Commissioner, Mr. Colman, then opened the object of the meeting.

He stated the great satisfaction, which he felt in meeting again in that place his brother farmers from every part of the state, and so numerous an assembly of intelligent and respectable persons, who took an interest in a matter of such paramount importance as the Agriculture of the Commonwealth and the country. The weekly meetings of the last winter, during the session of the Legislature, of the farmers of the Legislature and others, had given much pleasure;

elicited much useful information; stimulated agricultural inquiry; and, in various ways, been productive of highly beneficial effects. This was to be regarded as the introduction of another series of meetings, the results of which, he trusted, would be equally agreeable and useful.

It was gratifying to meet on an occasion where the conflicting elements of party strife could not be aroused; and where any difference of opinion, which might be found to prevail, could have no other effect than to encourage inquiry and experiment, the only sure roads to useful knowledge. Intelligent minds here brought into collision would emit; light but it would be light without heat. This could have no other effect than to extend knowledge and improve skill in that great art, which lies at the foundation of individual subsistence, of domestic comfort, and of national wealth.

The importance of this great art, agriculture, could not be over estimated. He trusted that the public mind would presently arrive at sounder and more comprehensive views of its great moment; its bearing upon the various sections of society, upon the general welfare, and the moral condition of the community; and elevate it to its proper rank among the humane arts and the useful pursuits of life.

The subject which he had the honor to propose for the discussion of the evening was, 'The Agriculture of Massachusetts.' This subject particularly concerned them as the citizens of a state, eminently distinguished for its social privileges and improvements. Agriculture in Massachusetts had not re-

ceived the attention which it might justly claim. Its progress had not kept pace with the advances made in the mechanic arts and in commercial enterprise. It was not justly appreciated among us. The soil of Massachusetts had been too much disdained and its climate pronounced unfavorable to agriculture. We were, in a large measure, and to far too great a degree, dependent upon other places and countries for a supply of the substantial products of the earth, and the first necessaries of life. We did not raise our own bread or potatoes; and we imported largely of the necessary supplies for man and beast.

This was not as it should be. There was nothing in the soil or climate of Massachusetts inconsistent with a highly improved and profitable agriculture. It was his confident belief that Massachusetts was fully capable of producing her own bread; and in this respect, what could be done ought to be done. Her power was the only limit of her duty. In the good morals and good habits of her people, in their industry, temperance, frugality, and general intelligence, there were all the elements of improvement; and the best foundation for an intelligent, skilful, and consequently productive agriculture.

In repeated instances her crops had been remarkable. There had been raised seven hundred bushels of potatoes upon an acre, more than nine hundred bushels of ruta baga, more than seventeen hundred bushels of carrots, more than six hundred bushels of onions, more than four tons of hay, forty bushels of rye, fifty bushels of barley, fifty bushels of wheat, one hundred bushels of oats, and more than one hun-

dred bushels of Indian corn. What had been done could be done again ; and instead of stopping short at what had already been reached, we should never be satisfied without at least attempting to go further. In some respects Massachusetts was singularly blessed ; and that is, in her capacity of growing Indian Corn. In respect to this magnificent crop, magnificent from its bountifulness and its important uses, it was said by Arthur Young, that a country which could produce it, should be regarded, in an agricultural view, as eminently distinguished. Yet even with a capacity for its abundant production, the produce of this crop was not a tithe of what it should be. It had been calculated by a gentleman well qualified to judge, in the case, that the product of Indian corn in Massachusetts, did not average half a peck to every acre of her whole territory. It was easy to see, if the state produced a bushel of Indian corn for every acre, and this was by no means an extravagant calculation of what she ought to do, what a vast amount would be added to her resources, her comfort, and her wealth. The same remarks would apply with equal force to other crops, which might be cultivated with corresponding advantage. But little was to be expected until agriculture should rise to its proper place in the public estimation ; until it should be felt and acknowledged to be, as in truth it is, next to its morals, the highest interest of the community. To raise it to this point, we must have not only practical skill and experience, but the joint aid of science and intelligence, of labor and capital to assist its progress ; and the force of public opinion and public respect in its favor.

In agriculture experience is of great value. Agriculture is particularly an art resting upon facts. Theories are of little value excepting as they are directly deducible from actual experiments and well attested and acknowledged facts. It is a matter likewise in which we might avail ourselves with essential benefit of the experience of others, who have pursued the art with success and carried it to a high degree of perfection, especially as far as our circumstances resemble theirs, and their rules and practices are applicable to our condition.

The highly improved agriculture of England and Scotland would in various respects afford most valuable and instructive lessons; and the Commissioner added, that he had the highest pleasure in saying, that their distinguished fellow citizen, who had recently returned from his tour in Great Britain, had at his request come to the meeting of the farmers of Massachusetts this evening, and would favor us with his observations on foreign agriculture in its highly improved condition, and on its improved practices in their applicableness to husbandry among ourselves. In intelligent and practical observation, in familiar acquaintance with the agriculture of New England, and in a just sense and comprehensive view of the importance of this great art, no one could be better qualified to make observations abroad, or to determine with sounder judgement what would be applicable and useful to his countrymen at home. While, therefore, in common with others of his fellow citizens, the farmers of Massachusetts tendered to him their hearty welcome on his return to his native

shores, he would in behalf of the meeting, pledge to him, on this occasion, their respectful and undivided attention.

Mr. Webster began with stating that he regarded agriculture as the leading interest of society; and as having, in all its relations, a direct and intimate bearing upon human comfort and the national prosperity. He had been familiar with its operations in his youth; and he had always looked upon the subject with a lively and deep interest. He did not esteem himself to be particularly qualified to judge of the subject in all its various aspects and departments; and he neither himself regarded, nor would he have others regard his opinions as authoritative; but the subject had been one of careful observation to him, both in public and private life; and his visit to Europe, at a season of the year particularly favorable for this purpose, had given him the opportunity of seeing its improved husbandry, and as far as it might be interesting, or would have a bearing upon the subject of the evening's discussion, the agriculture of Massachusetts, he would, as the meeting appeared to expect, say a few words upon what had attracted his notice.

How far, in a question of this kind, the example of other countries was to be followed, was an inquiry worthy of much consideration. The example of a foreign country might be too closely followed. It would furnish a safe rule of imitation only as far as

the circumstances of the one country correspond with those of the other.

The great objects of agriculture, and the great agricultural products of England, and of Massachusetts, are much the same. Neither country produces olives, nor rice, nor cotton, nor the sugar cane. Bread, meat, and clothing are the main productions of both. But although the great productions are mainly the same, yet there are many diversities of condition and circumstances and various modes of culture.

The primary elements which enter into the consideration of the agriculture of a country are four; climate, soil, price of land, and price of labor. In any comparison, therefore, of the agriculture of England with that of Massachusetts, these elements are to be taken particularly into view.

The climate of England differs essentially from that of this country. England is on the western side of the eastern, and we on the eastern side of the western continent. The climate of each country is materially affected by its respective situation in relation to the ocean. The winds, which prevail most, both in this country and in England are from the west; it is known that the wind blows, in our latitudes, from some point west to some point east, on an average of years nearly or quite three days out of four. These facts are familiar. The consequences resulting from them are, that our winters are colder and our summers much hotter than in England. Our latitude is about that of Oporto, yet the temperature is very different. On these accounts, there-

fore, the maturing of the crops in England and the power of using these crops, creates a material difference between its agriculture and ours. It may be supposed that our climate must resemble that of China in the same latitudes; and this fact may have an essential bearing upon that branch of agriculture which it is proposed to introduce among us, the production of silk.

The second point of difference between the two countries lies in the soil. The soil of England is mainly argillaceous; a soft and unctuous loam upon a substratum of clay. This may be considered as the predominant characteristic in the parts which he visited. The soil in some of the southern counties of England is thinner; some of it is what we should call stony; much of it is a free gravelly soil, with some small part which with us would be called sandy. Through a great extent of country this soil rests on a deep bed of chalk. Ours is a granite soil. There is granite in Great Britain; but this species of soil prevails in Scotland, a part of the country which more resembles our own. We may have lands as good as any in England. Our alluvial soils on Connecticut river and in some other parts of the country, are equal to any lands; but these have not, ordinarily, a wide extent of clay subsoil. The soil of Massachusetts is harder, more granitic, less abounding in clay, and altogether more stony, than the soil of England. The surface of Massachusetts is more uneven, more broken with mountain ridges, more diversified with hill and dale, and more abundant in streams of water, than that of England.

The price of land in that country, another important element in agricultural calculations, differs greatly from the price of land with us. It is three times as high as in Massachusetts, at least.

On the other hand, the price of agricultural labor is much higher in Massachusetts, than in England. In different parts of England the price of labor is considerably various; but it may be set down as twice as dear with us here.

These are the general remarks, which have suggested themselves in regard to the state of things abroad. Now have we any thing to learn from them? Is there any thing in the condition of England, applicable to ours; or, in regard to which, the agriculture of England may be of use to Massachusetts and other countries?

The subject of agriculture in England has strongly attracted the attention and inquiries of men of science. They have studied particularly the nature of the soil. More than twenty years ago, Sir Humphrey Davy undertook to treat the subject of the application of chemical knowledge to agriculture in the analysis of soils and manures. The same attention has been continued to the subject; and the extraordinary discoveries and advances in chemical science, since his time, are likely to operate greatly to the advantage of agriculture. The best results may be expected from them. These inquiries are now prosecuted in France with great enthusiasm and success. We may hope for like beneficial results here from the application of science to the same objects.

But although the circumstances of climate and sit-

uation and nature of the soil form permanent distinctions, which cannot be changed, yet there are other differences, resulting from different modes of culture, and different forms of applying labor; and it is to these differences that our attention should be particularly directed. Here, there is much to learn. English cultivation is more scientific, more systematic, and more exact, a great deal than ours. This is partly the result of necessity. A vast population is to be supported on comparatively a small surface. Lands are dear, rents are high, and hands, as well as mouths, are numerous. Careful and skilful cultivation is the natural result of this state of things. An English farmer looks not merely to the present year's crop. He considers what will be the condition of the land, when that crop is off; and what it will be fit for, the next year. He studies to use his land, so as not to abuse it. On the contrary, his aim is to get crop after crop, and still the land shall be growing better and better. If he would content himself with raising from the soil a large crop this year, and then leaving it neglected and exhausted, he would starve. It is upon this fundamental idea of constant production without exhaustion, that the system of English cultivation, and indeed of all good cultivation, is founded. England is not original in this. Flanders, and perhaps Italy, have been her teachers. This system is carried out in practice, by a well considered rotation of crops. The form, or manner of this rotation, in a given case, is determined very much by the value of the soil, and partly by the local demand for particular products. But some rotation,

some succession, some variation in the annual productions of the same land, is essential. No tenant could obtain a lease, or if he should, could pay his rent and maintain his family, who should wholly disregard this. White crops are not to follow one another. White crops are wheat, barley, rye, oats, &c. Our maize, or Indian corn, must be considered a white crop; although from the quantity of stalk and leaf which it produces, and which are such excellent food for cattle, it is less exhausting than some other white crops; or to speak more properly, it makes greater returns to the land. Green crops are turnips, potatoes, beets, vetches or tares, (which are usually eaten while growing, by cattle and sheep or cut for green food) and clover. Buck or beech wheat, and winter oats, thought to be a very useful product, are regarded also as green crops, when eaten on the land; and so indeed may any crop be considered, which is used in this way. But the turnip is the great green crop of England. Its cultivation has wrought such changes, in fifty years, that it may be said to have revolutionized English Agriculture.

Before that time, when lands became exhausted by the repetition of grain crops, they were left, as it was termed, fallow; that is, were not cultivated at all, but abandoned to recruit themselves as they might. This occurred as often as every fourth year, so that one quarter of the arable land was always out of cultivation and yielded nothing. Turnips are now substituted in the place of these naked fallows; and now land in turnips is considered as fallow. What is the philosophy of this? The raising of crops, even of

any, the most favorable crop, does not in itself enrich, but in some degree, exhausts the land. The exhaustion of the land, however, as experience and observation have fully demonstrated, takes place mainly when the seeds of a plant are allowed to perfect themselves. The turnip is a biennial plant. It does not perfect its seed before it is consumed. There is another circumstance in respect to the turnip plant, which deserves consideration.

Plants, it is well understood, derive a large portion of their nutriment from the air. The leaves of plants are their lungs. The leaves of turnips expose a wide surface to the atmosphere, and derive, therefore, much of their subsistence and nutriment from these sources. The broad leaves of the turnips likewise shade the ground, preserve its moisture, and prevent, in some measure, its exhaustion by the sun and air.

The turnips have a farther and ultimate use. Meat and clothing come from animals. The more animals are sustained upon a farm, the more meat and the more clothing. These things bear, of course, a proportion to the number of bullocks, sheep, swine, and poultry which are maintained. The great inquiry then is, what kind of crops will least exhaust the land in their cultivation, and furnish at the same time, support to the largest number of animals?

A very large amount of land in England is cultivated in turnips. Fields of turnips of three, four, and even five hundred acres are sometimes seen, though the common fields are much less; and it may

be observed here, that in the richest and best cultivated parts of England, enclosures of ten, fifteen, twenty, or thirty acres, seemed more common. Since the introduction of the turnip culture, bullocks and sheep have trebled in number. Turnips, for the reasons given, are not great exhausters of the soil; and they furnish abundant food for animals. Let us suppose, that one bushel of oats or barley may be raised at the same cost as ten bushels of turnips; and will go as far in support of stock. The great difference in the two crops is to be found in the farmer's barn yard. Here is the test of their comparative value. This is the secret of the great advantages, which follow from their cultivation. The value of manure in agriculture is well appreciated. M'Queen states the extraordinary fact, that the value of the animal manure annually applied to the crops in England, at current prices, surpasses in value the whole amount of its foreign commerce.* There is no doubt that it greatly exceeds it. The turnip crop returns a vast amount of nutritive matter to the soil. The farmer, then, from his green crops, and by a regular system of rotation, finds green feed for his cattle and wheat for the market.

Among the lighter English soils, is that of the

* This is a very extraordinary fact, but it rests upon good authority; and when it is considered that this is of course the product of agriculture, as well as going in the great circle, to renew and extend these products, we must have strong impressions of the amazing extent of this great interest. In this case, cattle manure is valued at 4*s*. sterling; sheep at 3*s*.; horse at 4*s*.; pigs, poultry, &c., at 3s. per load; size of load not given; making a grand total of £59,860,000 sterling, or nearly 300,000,000 dollars. This is understood to be "exclusive of quantity dropped by cattle on land during summer, autumn, &c., perhaps one third more; and exclusive of lime, moss, shells, fish, bone dust, &c."—*McQueen's British Statistics*, p. 51. H. C.

county of Norfolk; a county, however, which he had not the pleasure to visit. Its soil, he understood, is light, a little inclined to sand, or light loam. Such soils are not unfavorable to roots. Here is the place of the remarkable cultivation and distinguished improvements of that eminent cultivator, Mr. Coke, now Earl of Leicester.* In these lands, he understood, a common rotation is turnips, barley, clover, wheat. These lands resemble much of the land in our county of Plymouth; and the sandy lands to be found in the vicinity of the Connecticut and Merrimack rivers. The cultivation of green crops in New England deserves attention. There is no incapacity in our soil; and there are no circumstances unfavorable to their production. What would be the best kind of succulent vegetables to be cultivated, whether turnips, or carrots, he was not prepared to say. But no attempts within his knowledge had been made among us of a systematic agriculture; and until we enter upon some regular rotation of crops, and our husbandry becomes more systematic, no distinguished success can be looked for. As to our soil, as had been remarked, there is no inherent incapacity for the production of any of the common crops. We could raise wheat in Massachusetts. The average crop in England is twenty-six bushels to the acre. From his own farm, and it was comparatively a thin and poor soil, he had obtained this summer seventy-six bushels of wheat upon three acres of land. It is not, therefore, any want of capability in the soil; but the im-

* He has increased the rental of his farms by his improvements, from twenty-five to two hundred thousand dollars a year. H. C

provement and success of our husbandry must depend upon a succession of crops adapted to the circumstances of our soil, climate, and peculiar condition.

In England, a large portion of the turnip crop is consumed on the land where it grows. The sheep are fed out of doors all winter; and he saw many large flocks, thousands and millions of sheep, which were never housed. This was matter of surprise, especially considering the wetness of the climate; and these sheep were often exposed in fields where a dry spot could not be found for them to lie down upon. Sheep were often folded in England by wattled fences or hurdles temporarily erected in different parts of the field, and removed from place to place as the portions of the crop were consumed. In some cases they were folded and the turnips dug and carried to them. In such case they were always fed upon lands which were intended the next year to be, as far as practicable, brought under cultivation. He had seen many laborers in fields, employed in drawing the turnips, splitting them, and scattering them over the land, for the use of the sheep, which was considered better, often, than to leave the sheep to dig for themselves. These laborers would be so employed all winter, and if the ground should become frozen, the turnips are taken up with a bar. Together with the turnips, it is thought important that sheep should have a small quantity of other food. Chopped hay, sometimes a little oil cake, or oats, is usually given. This is called *trough* food, as it is eaten in troughs, standing about in the field. In so moist a climate as that of England,

some land is so wet, that, in the farmer's phrase, it will not *carry sheep;* that is, it is quite too wet for sheep to lie out upon it. In such cases the turnips must be *carried*, that is, removed from the field, and fed out elsewhere. The last season was uncommonly wet, and for that reason, perhaps, he could not so well judge, but it appeared to him it would be an improvement in English husbandry to furnish for sheep, oftener than is done, not only a tolerably dry ground to lie on, but some sort of shelter against the cold rains of winter.* The turnips, doubtless, are more completely consumed, when dug, split, and fed out. The Swedish turnip, he had little doubt, was best suited to cold climates. It was scarcely injured by being frozen in the ground in the winter, as it would thaw again, and be still good in spring. In Scotland, in the Lothians, where cultivation is equal to that in any part of England, it is more the practice than farther south, to house turnips, or draw them, and cover them from frost.† He had been greatly pleased with Scotch farming, and as the climate and soil of Scotland more resembled the soil and climate of Massachusetts, than those of England did, he hoped the farmers of Massachusetts would acquaint themselves, as well as they could, with Scotch husbandry. He had had the pleasure of passing some time in Scotland, with persons engaged in these pursuits, and acknowledged himself much instructed by what he learned from them, and saw in their company. The great extent of the use of turnips, and other green

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* See Appendix,—Note A. † Ibid,—Note B.

crops, in Scotland, is evidence that such crops cannot be altogether unsuited to Massachusetts.

Mr. Webster proceeded to state, that one of the things which now attracted much attention among agriculturists in England, was the subject of tile draining. This most efficient and successful mode of draining is getting into very extensive use. Much of the soil of England, as he had already stated, rested on a clayey and retentive sub-soil. Excessive wetness is prejudicial and destructive to the crops. Marginal drains, or drains on the outside of the fields, do not produce the desired results. These tile drains have effected most important improvements. The tile itself is made of clay, baked like bricks; about one foot in length, four inches in width, three fourths of an inch in thickness, and stands from six to eight inches in height, being hemispherical, or like the half of a cylinder, with its sides elongated. It resembles the Dutch tiles sometimes seen on the roofs of the old houses in Albany and New York. A ditch is sunk eighteen or twenty inches in depth, and these drains are multiplied, over a field, sometimes at a distance of only seven yards apart.* The ditch, or drain, being dug, these tiles are laid down, with the hollow side at bottom, on the smooth clay, or any other firm subsoil, the sides placed near to each other, some little straw thrown over the joints to prevent the admission of dirt, and the whole covered up. This is not so expensive a mode of draining as might be supposed. The ditch, or drain, need only be

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* See Appendix,—Note C.

narrow, and tiles are of much cheaper transportation than stone would be. But the result is so important, as well to justify the expense. It is estimated that this thorough draining adds often twenty per cent to the production of the wheat crop. A beautiful example came under his observation in Nottinghamshire, not long before he left England. A gentleman was showing him his grounds for next year's crop of wheat. On one side of the lane, where the land had been drained, the wheat was already up, and growing luxuriantly; on the other, where the land was subject to no other disadvantage, than that it had not been drained, it was still too wet to be sowed at all. It may be thought singular enough, but it was doubtless true, that on stiff clayey lands, thorough draining is as useful in dry, hot summers, as in cold and wet summers; for such land, if a wet winter or spring be suddenly followed by hot and dry weather, is apt to become hard and baked, so that the roots of plants cannot enter it. Thorough draining, by giving an opportunity to the water on the surface to be constantly escaping, corrects this evil. Draining can never be needed to so great an extent in Massachusetts, as in England and Scotland, from the different nature of the soil; but we have yet quantities of low meadow lands, producing wild, harsh, sour grasses, or producing nothing, which, there is little doubt, might be rendered most profitable hay fields, by being well drained.* When we understand better the importance of concentrating labor, instead of scatter-

* See Appendix,—Note D.

ing it; when we shall come to estimate, duly, the superior profit of "a little farm well tilled," over a great farm, half cultivated and half manured, overrun with weeds, and scourged with exhausting crops, we shall then fill our barns, and double the winter feed for our cattle and sheep by the products of these waste meadows.

There was in England, another mode of improvement, most important, instances of which he had seen, and one of which he regarded as the most beautiful agricultural improvement, which had ever come within his observation. He meant irrigation, or the making of what is called water meadows. He had first seen them in Wiltshire, and was much struck with them, not having before understood, from reading or conversation, exactly what they were. But he had afterwards an opportunity of examining a most signal and successful example of this mode of improvement on the estates of the Duke of Portland, in the North of England, on the borders of Sherwood forest. Indeed, it was part of the old forest. Sherwood forest, at least in its present state, is not like the pine forests of Maine, the heavy hard wood forests of the unredeemed lands of New Hampshire and Vermont, or the still heavier timbered lands of the West. It embraces a large extent of country, with various soils, some of them thin and light, with beautiful and venerable oaks, of unknown age, much open ground between them and underneath their widespread branches, and this covered with heather, lichens and fern. As a scene to the eye, and to the memory by its long existence, and its associations,

it is beautiful and interesting. But in many parts, the soil is far enough from being rich. Upon the borders of this forest, are the water meadows of which he was speaking. A little river ran through the forest in this part, at the bottom of a valley, with sides moderately sloping, and of considerable extent, between the river at the bottom and the common level of the surrounding country above. This little river, before reaching the place, ran through a small town, and gathered, doubtless, some refuse matter in its course. From this river the water was taken, at the upper end of the valley, conducted along the edge, or bank, in a canal or carrier, and from this carrier, at proper times, suffered to flow out, very gently, spreading over and irrigating the whole surface, trickling and shining when he saw it, (and it was then November,) among the light green of the new-springing grass, and collected below in another canal, from which it was again let out, to flow in like manner over land lying still further down towards the bottom of the valley. Ten years ago, this land, for production, was worth little or nothing. He was told that some of it had been let for no more than a shilling an acre. It has not been manured, and yet is now most extensively productive. It is not flooded; the water does not stand upon it; it flows gently over it, and is applied several times in a year, to each part, say in March, May, July and October. In November, when he saw it, the farmers were taking off the third crop of hay cut this season, and that crop was certainly not less than two tons to the acre. This last crop was mostly used as green

food for cattle. When he spoke of the quantity of tons, he meant tons of dried hay. After this crop was off, sheep were to be put on it, to have lambs at Christmas, so as to come into market in March, a time of year when they command a high price. Upon taking off the sheep in March, the land would be watered, the process of watering lasting two or three days, or perhaps eight or ten days, according to circumstances, and repeated after the taking off of each successive crop. Although this water has no doubt considerable sediment in it, yet the general fact shows how important water is to the growth of plants, and how far even it may supply the place of other sources of sustenance. Now, we in Massachusetts, have a more uneven surface, more vallies with sloping sides, by many times more streams, and such a climate that our farms suffer much oftener from drought than farms in England. May we not learn something useful, therefore, from the examples of irrigation in that country.*

With respect to implements of husbandry, Mr. Webster was of opinion that the English, on the whole, had no advantage over us. Their wagons and carts were no better, their ploughs he thought, were not better any where, and in some counties far inferior, because unnecessarily heavy. The sub-soil plough, for which we have little use, was esteemed a useful invention, and the mole plough, which he had seen in operation, and the use of which was to make an under-ground drain, without disturbing the sur-

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* See Appendix,—Note E.

face, was an ingenious contrivance, likely to be useful in clay soils, free from stone and gravel, but which could be little used in Massachusetts. In general, he thought the English utensils of husbandry were unnecessarily cumbrous and heavy. The ploughs, especially, required a great strength of draught. But as drill husbandry was extensively practised in England, and very little with us, the various implements, or machines, for drill sowing, in that country, quite surpass all we have. He did not remember to have seen the horse-rake used in England, although he had seen in operation implements for spreading hay, from the swarth, to dry, or rather, perhaps, for turning it, drawn by horses.

There were other matters connected with English agriculture, upon which he might say a word or two. Crops were cultivated in England, of which we knew little. The common English field bean, a small brown bean, growing not on a clinging vine, like some varieties of the taller bean, ran in what is called with us the bush form, like our common white bean, upon a slight, upright stalk, two or two and a half feet high, and producing from twenty to forty bushels to the acre. It is valuable, as food for animals, especially for horses. This bean does not grow well, in thin soils, or what is called a hot bottom.* A strong, stiff, clayey land, well manured, suits it best. Vetches, or tares, a sort of pea, was very much cultivated in England, although almost unknown here, and is there either eaten green, by sheep, on the land, or cut and carried for green food.†

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* See Appendix,—Note F. † Ibid,—Note G.

The raising of sheep, in England, is an immense interest. England probably clips fifty millions of fleeces this year, lambs under a year old not being shorn. The average yield may be six or seven pounds to a fleece.* There are two principal classes of sheep in England, the long wooled, and the short wooled. Among these are many varieties, but this is the general division, or classification. The Leicester, and the South Down, belong respectively, to these several families. The common clip of the former may be estimated from seven to eight pounds; and of the last from three to three and a half or four. Mr. Webster mentioned these particulars only as estimates; and much more accurate information might doubtless be obtained from many writers. In New England, we were just beginning to estimate rightly the importance of raising sheep. England had seen it much earlier, and was pursuing it with far more zeal and perseverance. Our climate, as already observed, differs from that of England; but the great inquiry applicable in equal force to both countries is, how can we manage our land in order to produce the largest crops, while at the same time we keep up the condition of the land and place it if possible in a course of gradual improvement? The success of farming must depend in a considerable degree upon the animals produced and supported on the farm. The farmer may calculate in respect to animals upon two grounds of profit; the natural growth of the animal, and the weight obtained by fattening. The skil-

* See Appendix,—Note H.

ful farmer, therefore, expects where he gains one pound in the fattening of his animal, to gain an equal amount in the growth. The early maturity of stock is consequently a point of much importance.

Oxen are rarely reared in England for the yoke. In Devonshire and Cornwall, ox teams are employed; but in travelling one thousand miles in England, Mr. Webster saw only one ox team, and here they were driven one before the other, and in harnesses similar to the harnesses of horses. Bullocks are raised for the market. It is highly desirable, therefore, both in respect to neat cattle and sheep, that their growth should be rapid and their fattening properties favorable, that they may be early disposed of, and consequently the expense of production lessened.

Is it practicable on the soil and in the climate of Massachusetts to pursue a succession of crops? He could not question it; and he had entire confidence in the improvements to our husbandry and the great advantages which would accrue from judicious rotation of products. The capacities of the soil of Massachusetts were undoubted. One hundred bushels of corn to an acre had been repeatedly produced, and other crops in like abundance. But this would not effect the proper ends of a judicious and profitable agriculture, unless we could so manage our husbandry that by a judicious and proper succession of crops, the land would not only be restored after an exhausting crop, but gradually enriched by cultivation. It is of the highest importance that our farmers should increase their power of sustaining live stock, that they may therefrom obtain the means of improving their farms.

The breed of cattle in England was greatly improved, and still improving. He had seen some of the best stocks, and many individual animals from others, and thought them admirable. The short horned cattle, brought to this country, were often very good specimens. He said he had seen the flocks from which some of them had been selected, and they were certainly among the best in England. But in every selection of stock, we are to regard our own climate, and our own circumstances. We raise oxen for work, as well as for beef; and he was of opinion that the Devonshire stock furnished excellent animals for our use. We had suffered that old stock, brought hither by our ancestors, to run down, and be deteriorated. It had been kept up, and greatly improved, in England, and we might now usefully import from it. The Devonshire ox is a hardy animal, of size and make suited to the plough, and though certainly not the largest for beef, yet generally very well fattened. He thought quite well, also, of the Ayrshire cows. They were good milkers, and being a hardy race, were, on that account, well suited to the cold climate, and to the coarse and sometimes scanty pasturage of New England. After all, he thought, there could be no doubt, that the improved breed of short horns were the finest cattle in the world, and should be preferred, wherever plenty of good feed, and some mildness of climate invited them. They were well fitted to the Western States, where there is an overflowing abundance, both of winter and summer feed, and where, as in England, bullocks are raised for beef only. He had no doubt,

also, that they might be usefully raised in the rich valleys of the Connecticut, and perhaps in some other favored parts of the State. But, for himself, as a farmer on the thin lands of Plymouth county, and on the bleak shores of the sea, he did not feel that he could give, to animals of this breed, that entertainment, which their merit deserved.

As to sheep, the Leicester were like the short horned cattle. They must be kept well; they should always be fat; and, pressed by good keeping, to early maturity, they are found very profitable. "Feed well," was the maxim of the great Roman farmer, Cato; and that short sentence comprises much of all that belongs to the profitable economy of live stock. The South Downs are a good breed, both for wool and mutton. They crop the grass that grows on the thin soils, over beds of chalk, in Wiltshire, Hampshire, and Dorsetshire. They ought not to scorn the pastures of New England.

When one looks, said Mr. Webster, to the condition of England, he must see of what immense importance is every, even the smallest degree of improvement in its agricultural productions. Suppose that by some new discovery, or some improved mode of culture, only one per cent could be added to the annual results of English cultivation; this, of itself, would materially affect the comfortable subsistence of millions of human beings. It was often said that England was a garden. This was a strong metaphor. There was poor land, and some poor cultivation in England. All people are not equally industrious, careful, and skilful. But on the whole, Eng-

land was a prodigy of agricultural wealth. Flanders might possibly surpass it. He had not seen Flanders; but England quite surpassed, in this respect, whatever he had seen. In associations for the improvement of agriculture, we had been earlier than England. But such associations now exist. He had the pleasure of attending the first meeting of the National Agricultural Society, and he had found it a very pleasant and interesting occasion. Persons of the highest distinction for rank, talents, and wealth, were present, all zealously engaged in efforts for the promotion of the agricultural interests. No man in England was so high, as to be independent of the success of this great interest; no man so low, as not to be affected by its prosperity, or its decline. The same is true, eminently and emphatically true, with us. Agriculture feeds us; to a great degree it clothes us; without it, we could not have manufactures, and we should not have commerce. These all stand together, but they stand together, like pillars in a cluster, the largest in the centre, and that largest is agriculture. Let us remember, too, that we live in a country of small farms, and free-hold tenements; a country, in which men cultivate with their own hands, their own fee-simple acres; drawing not only their subsistence, but also their spirit of independence, and manly freedom from the ground they plough. They are at once its owners, its cultivators, and its defenders. And whatever else may be undervalued, or overlooked, let us never forget, that the cultivation of the earth is the most important labor of man. Man may be civilized, in some degree,

without great progress in manufactures, and with little commerce with his distant neighbors. But without the cultivation of the earth, he is, in all countries, a savage. Until he steps from the chase, and fixes himself in some place, and seeks a living from the earth, he is a roaming barbarian. When tillage begins, other arts follow. The farmers, therefore, are the founders of human civililization.

After Mr. Webster closed, Mr. SILLIMAN began by remarking that he was taken wholly by surprise, nothing having been farther from his thoughts than to say any thing on this occasion. Indeed, after the remarks from the honorable gentleman who had just spoken, to which he had, in common with others, the pleasure of listening, there was little that need be said by any one. On an occasion so gratifying as the present, and offering objects of inquiry and discussion so highly important and interesting, he could not, however, withhold the expression of his own personal interest in the case, and what little aid to the cause might be derived from his concurrence.

In the statement relating to British husbandry, made by the honorable gentleman who preceded him, and in the impressions which that gentleman had gathered from his observation of rural and agricultural life in England, he expressed his entire assent and sympathy. In a visit many years since, made by himself to England, he derived from similar though

far less perfect opportunities of observation, great pleasure; and he left the country more than thirty years ago, with a strong admiration for the extraordinary improvements and advances made in this great art, in that active, populous, and intelligent community.

The British nation had long since arrived at the conviction, which experience and further inquiry had served only to confirm and strengthen, that science in all its influences might lend a most substantial aid to agriculture. They therefore have largely availed themselves of its aid in the chemical examination of soils and manures, with a view to ascertain their uses and correctives.

The popular impressions formerly entertained, that little was to be gained in agriculture by the application of science, are, in a great measure removed. Nothing could have less foundation in reason or fact. The advantages of the judicious application of knowledge to art, are every where obvious. All the arts of life have their foundation in knowledge; and all the improvements of mechanism, from a wheelbarrow to a chronometer, are due to science and mechanical philosophy. It will be fouud true in relation to every thing connected with human improvement and comfort, even in the commonest departments of life, the more knowledge the better.

Inquiries into the nature of soils are of great importance; and in respect to many soils now either wholly unproductive or uncongenial to certain crops, science may enable us to apply the necessary alteratives or correctives. Although we cannot fabricate

in a laboratory the soils of a country, we can discover their composition and ascertain their deficiences; the deficient ingredient may be supplied, and although it should be in small quantities, it may be done in a form that may be generally practicable, and thus may essentially change the character of a soil.

The honorable gentleman has, without doubt, truly assigned the causes of the mildness of the climate of western Europe, and especially of Great Britain; and he has indicated with equal clearness and truth the causes of the comparative coldness of the Eastern countries of North America. In this connexion it may be remarked that the western countries of this continent enjoy a climate far milder than the eastern.

The climate of these western countries is affected by their position in relation to the vast Pacific ocean, which produces an effect similar to that of the Atlantic ocean upon Europe, but in a far greater degree. Thus the climate corresponds to a considerable degree with that of the western shores of Europe. Its mildness is such that the plough may be driven nearly or quite through the whole year. Its temperature is, perhaps, considerably affected by its geological formation and by the extensive range of volcanoes, which stretch along its shores, and some of which are still breathing forth their internal heat. Here every thing is on a vast scale; and the agricultural products will at no distant day, become abundant and highly important. We cannot indeed alter the climate of a country; but we may in some measure accommodate our husbandry to its peculiarities and variations.

The larger portion of the soils of New England, as stated by the honorable gentleman, is undoubtedly derived from granite and other primary rocks; and many of the red sandstone soils, such as those in the neighborhood of New Haven, are, in fact composed of the principles found in granite rocks. Argillaceous soils, or those which are derived chiefly from the decomposition of argillaceous or clay slate, abound likewise in many parts of New England and of Massachusetts, and being retentive of water, are found highly productive in grass and grains.

A considerable part of the nutriment of plants is undoubtedly derived from the air, and water, or its elements, constitutes a large portion of their food. The composition of water is now well understood, and we may with safety, in the presence of this intelligent assembly, speak in technical terms of the constituent parts of water, hydrogen and oxygen, which enter largely into all vegetables. Carbon, which forms also a large part of all plants, though it exists in comparatively small proportions in the form of carbonic acid gas in the air, is yet derived from innumerable sources and supplied to the growing vegetables in abundance. The effect of light upon the green leaves of plants is to decompose the carbonic acid, and the carbon is absorbed to nourish the plant, and the oxygen is evolved into the air; thus it separates from the atmosphere an important element of nutrition, supplying it in the form of food for the plants.

Mr. Silliman farther alluded to the curious fact in the constitution of nature, that notwithstanding the

superior density or specific gravity of carbonic acid gas, it being much greater than that of the other elements of which the atmosphere is composed, it is nevertheless found in abundance in the elevated regions of the earth, and even on high and barren mountains contributes in an important degree to the support of plants and of trees. If the air and water afford the most important elements of plants, it may be asked, what then is the use of the soil? Its first use is to furnish a point of support in which the plant can fix itself; but it doubtless contains many things which water serves to dissolve, and hold in solution, that they may be taken up by the plants. He expressed his belief that in most of the soils in New England and in Massachusetts, the principal element wanting is lime. This abounds in the western districts of New York, and renders those lands, as in Geneseo for example, on the magnificent farm of Mr. Wadsworth, extraordinarily productive in wheat.

The addition of lime to our own soils, he considered of great importance. Our sea-shores abound in shells, whose base is lime, and which are capable, by being burnt, of being converted into the best of lime. New Haven, the town of his own residence, abounds in oysters, both natives and those that in great numbers are colonized there from Virginia. The shells are burnt for manure and applied to the land. The soil of New Haven and its vicinity is derived from a species of red sandstone; but this was composed of the elements of granite, quartz, mica and feldspar, the ruins of granitic and other primary rocks.

An interest in agriculture is now awakened in Connecticut, which promises the most valuable results; and improvements in cultivation are rapidly advancing. He agreed in the estimation of the Commissioner, of the great value of Indian corn. One hundred bushels had been repeatedly produced in New Haven upon an acre. A cattle show and agricultural and horticultural fair have been holden in New Haven annually for several years—the last autumn in particular, with a spirit which evinced the lively interest taken in the subject; and he had the pleasure on that occasion of seeing one hundred yoke of very fine oxen from East Haven, attached to a plough, and the plough holden by a venerable man of ninety-six years of age, who laid a furrow along the public square.

In his own opinion, there was no occasion, in an agricultural point of view, to despair of Massachusetts or any part of New England. There were no evils or disadvantages connected with the climate or soil, which could not be met and overcome. It was a great and lamentable error that so many of our young men deserted the pursuits of agriculture to crowd into the trades of cities.

He reverted again to the value and importance of chemical knowledge to agriculture. The analysis of manures was a subject of great and indispensable importance. The knowledge obtained from geological and agricultural surveys and chemical investigations, could not be too highly estimated; and the State could expend no money to more advantage than in

procuring and encouraging them.* This patonrage should not be withdrawn or withheld; and the withholding of it could arise only from a want of a just appreciation of the value of these branches of science. He alluded with much respect to the late lamented Judge Buel, whose skill in the science and application of manures was a just subject of eulogy, and whose success, in converting a portion of the barren and unpromising soil in the vicinity of Albany into fertile and productive fields, was well known and honored.

He pressed the importance of a Board of Agriculture, and congratulated Massachusetts upon the spirit and liberality with which she had regarded the improvement of her husbandry. The subject could not receive too much of her concern. It stood second to no interest but those of a moral and religious character, and indeed it might be said to be nearly allied to them also, since habits of rural industry are the most favorable to good morals. The value of science, in this case, could not be too highly estimated. Here science might be regarded as the eye, and practical skill the hand, by which this great art was to be carried forward to perfection.

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* See Appendix,—Note I.

APPENDIX.

(Note A.—p. 18.) Housing Sheep.

If sheep were allowed to give their voice on the subject, there is little doubt how the question would be decided. Where a shed is open at one side, sheep in case of a cold storm of rain or sleet, will always, if left to govern themselves, seek a shelter. Under other circumstances they are equally disposed to remain in the open air.

The very fine wooled sheep, whose constitutions are tender, require much nursing; and in our climate must be sheltered. This is necessary, also, in order to preserve the fineness of the wool; and some shepherds go so far as to put linen jackets upon them. With respect to the coarse wooled sheep, and the half bloods, many of the best farmers in Vermont and in the Western part of Massachusetts, have come to the conclusion that their flocks are, upon the whole, better in health, and that the per centage of loss in their flocks is less, where the flocks are fed at stacks in the field and rarely housed, except occasionally at their own pleasure, than where they are regularly shut up every night in a covered and close fold. Any one, who has been accustomed to the air of a sheep house, where a flock has been confined all night, can hardly doubt that it must be prejudicial to the health of the animals unless their lungs are made of leather.

Our climate differs essentially from that of England; but with us to fold sheep in wet yards is likely to produce the disease of the foot-rot, a most troublesome disorder and extremely difficult to eradicate. If it does not produce the disease, yet if the poison is lurking within the foot, it will bring it out and aggravate it. It is an infectious disorder, and I know from experience, much to be dreaded; though I am not prepared to say with a writer of no small credit, that the only effectual remedy is to cut off the sheep's head. H. C.

(Note B.—p. 18.) Turnips.

The common flat or white turnip is little cultivated among us, excepting for the table. The Swedish turnip or ruta baga is much more valued for its solidity, its supposed superior nutritiveness, and its endurance. It may be kept perfectly well until May, and often until June. They are easily grown; but the condition of the land cannot be too much enriched. With respect to the keeping of them through the winter, we protest, on account of the health and comfort of his family, against a farmer's ever putting any of the turnip or cabbage family into his house cellar; but they may be stored in his barn cellar, or a deposit may be made for them on his barn floor if the sides be well filled in and the top carefully covered with hay, for which purpose the poorest will answer. Or I have preserved them in perfection by pitting them in the field where they grew. For this purpose, on the driest part of the field, dig a hole about six inches or a foot in depth, and wide and long ac-

cording to the quantity of turnips you have to provide for, there deposit your ruta baga after they are dug and trimmed, and raise the pile in a sloping form like the pitched roof of a house. Do this after the dirt has been knocked off the turnips, and they have become as dry as circumstances will admit. Lay on the heap a thin layer of straw, and a thin covering of earth, leaving the south end of the heap, which should be made north and south, to be stopped up with several loose bundles of straw. Then make a few holes with a crow-bar to act as ventilators until the first heat of the turnips is over. Let them remain in this condition until the cold increases, so that they are in danger of freezing; then put another layer of straw and another covering of dirt, smoothed down neatly with the spade, so that it may shed the rain. Your turnips in this way will keep well all winter, and access to them will be easy through the winter at the south end, by removing the loose bundles of straw, and afterwards carefully replacing them. The straw and dirt, by the aid of frost, will make a perfect roof to your turnip house, which will stand firm until the frost is gone. I have kept hundreds of bushels for my stock in this way; and if a farmer desires in the feeding season to make accurate calculations of the amount consumed as he goes on, he can put them up in heaps of one or two hundred bushels each in different parts of his field, managing with them in the way I have described.

The cultivation of green esculent vegetable crops cannot be too strongly urged upon our farmers. We shall never reach an improved husbandry until we get into a regular system of rotation of crops; and green feed for our winter feeding forms a part of that rotation. Condiments or esculents of this sort are as important for our cattle as potatoes and other vegetables are upon the farmer's table. The condition of our cattle, and especially our young stock and our milking stock, would be greatly improved by them. This green feed can be produced in many cases at a less expense than long feed. It makes, from the exact cultivation required, an excellent preparation for grain; and it supplies under proper management, directly and efficiently the means of enriching our farms, and of increasing their productiveness in a rapid ratio.

H. C.

(Note C.—p. 19.) Draining.

According to the testimony of Mr. Kennedy, formerly M. P., and Mr. James Smith of Deanston, England, the author of this system of draining and inventor of the sub-soil plough, before a committee of the British Parliament, these drains where tiles are used, are sunk to a depth of twenty-four inches, and where stones are used, are sunk to a depth of thirty inches; the object in each case being to stir the ground in the course of improvement with the subsoil plough, to the depth of sixteen inches, without disturbing the tiles or the drain. When stones are used the ditch is sunk to the depth of 30 inches; small stones are then thrown in promiscuously to a height of 12 inches; and then a sod of 2 or 3 inches thick, inverted, is laid over the stones to prevent the dirt falling in and stopping the passage of the water; the top is then filled up and the field left smooth. The centre or main drain into which the cross drains empty, is sunk to the depth of three feet. These drains are durable and effectual. Tiles have not been used among us; but nearly twelve years ago, I made several hundreds of rods of these covered drains with small rough stone, as above described, in order to drain a wet field. The drains continue to operate well to this time. The value of the land was increased ten fold; and the increased crops soon

paid the whole expense of the improvement. These drains are entirely out of sight; but I would advise, whenever they are made, that their distances and direction should be accurately laid down in a plan of the farm, that they may easily be found in case of interruption.

In England the improvement is not considered as complete, until, after the land is drained, the whole field is by a gradual process, loosened with a subsoil plough to the depth of sixteen inches. The land is first ploughed to the depth of six inches and a crop of oats is taken; it is then ploughed again and subsoiled, if I may use the expression, to the very top of the drain, care being taken not to bring much of the subsoil to the surface at a time, but the top and the lower soil are intermixed by a gradual process of cultivation. Other crops are then taken from this land, which is cultivated and manured in the usual manner; and the products are enormously increased by this process. I shall give more full details in my third Report of the Agriculture of Massachusetts, now in the press. H. C.

(Note D.—p. 20.) Redemption of Peat Meadows.

Some most beautiful examples of the success of redeeming lands by draining, especially bog meadow, are to be found in Saugus, Lynn, Lexington, Framingham, Groton, and other towns in this State. In these cases, lands which were of little value, are now brought into most productive fields, yielding five or six hundred bushels of potatoes and three to four tons of hay per acre besides other crops. These however, are in general open drains. We have a very large amount of peat land in the State, which is capable of being thus redeemed and made some of the most productive in the State. By the estimation of the learned Geological Surveyor, there are more than 80,000 acres or 125 square miles. One of the most remarkable examples of this sort of improvement may be found detailed in the Appendix to the Third Report of the Agriculture of Massachusetts. This was made by Mr. Timothy H. Brown, of Saugus, and deserves particular attention. An account of it is given likewise, in the Reports of the Essex Agricultural Society for 1838—9.

There seems to me no reason why the introduction of the Deanston System of improvement, thorough draining and subsoil ploughing, may not be introduced among us in particular localities, to as great advantage as has been done in Scotland. H. C.

(Note E.—p. 23.) Irrigation.

A very skilful enterprise of this same kind, on a smaller scale, has been undertaken in Medway, which promises the best results. Here a considerable stream has been dammed and carried in a canal round the whole field of several acres, so as to be allowed to flow upon them over the bank at the pleasure of the owner. Two other examples of irrigation are to be seen, one in the the upper part of Dedham and one in Chelmsford, which, though on a small scale, have been eminently successful. Our improvements are very humble compared with those referred to by Mr. Webster; but they are creditable and encouraging. The struggling steps of infancy must be taken before we can move with the firm gait of manhood. The enriching qualities of water are far from being properly appreciated. In such circumstances as described, it is by no means a simple substance; and it effects an essential purpose in holding in solution the nutriment of the plant with which it mixes in its passage over the soil and percolations into it. H. C.

(Note F.—p. 24.) The Bean.

The Bean (*Vicia Faba.*)—"The bean is a valuable field plant, as affording food for live stock and in part for man. The varieties of the bean are two, garden and field beans, the white and the grey beans. The best soils for beans are clay and strong loams. On such soils they generally succeed wheat or oats, but sometimes also clover leys. Turnip soils or sands are by no means proper for them. The climate most favorable to the bean is one neither very dry nor very moist; the first brings on the fly; and the last prevents the setting of the blossoms. The flour of beans is more nutritive than that of oats, as it appears in the fattening of swine." Dr. Darwin thinks them a cheaper provender for horses than that of oats; but being of an oily nature, more difficult of digestion than oats, and he would therefore hesitate in giving them the preference for this object.

The bean is considered as an exhausting crop; but on account of the clean cultivation which is given to it, it often favorably precedes wheat. My own experiments in the cultivation of the English field bean, which I have tried two or three years, resulted in disappointment, as they were in every instance destroyed by a little black fly. This is the great enemy with which they have to contend abroad. Forty bushels to the acre must be regarded as a large yield. From twenty to thirty-five is more common.

The cultivation of the white bean among us, is pursued to a very small extent and in a very slovenly and negligent manner. Land that is under a curse and considered fit for nothing else, is usually selected for a crop of white beans; and a farmer would as soon think of dressing his children in peacock's feathers, as of giving any manure to his white beans. The result is exactly what, under such circumstances, is to be expected. We have no doubt, that under proper cultivation, beans may be made a highly productive and valuable crop. For feeding sheep, especially fatting-wethers, I have tried and know their value. Intermixed and ground or alternated with Indian corn, they are exceeedingly favorable for the thrift of sheep, and may be to a degree profitably used, notwithstanding the customary difference in price. We can hardly expect, however, that they should take the place of Indian corn; a crop which cannot be grown in England, which is not more exhausting than any other grain crop allowed to perfect its seeds, which when consumed on the farm under good management, returns a large amount to the land; and the rough fodder of which, when well cured, is almost an equivalent for the cost of cultivation.—H. C.

(Note G.—p. 24.) The Tare.

The Tare or Vetch (*vicia sativa*) is a plant which we have sometimes seen growing, but rarely cultivated among us. There is no hindrance in our climate to its cultivation; and perhaps the great reason why the cultivation of the tare or field bean has been neglected or not introduced, has arisen from our capacity to produce Indian corn; and our high estimation, which can hardly be extravagant, of its value as food for the brute and the human animal. As green feed especially, and for the purposes of soiling, undoubtedly the tares might be introduced to great advantage.

"The Tare," says Low, "is one of the most esteemed of the leguminous plants of this country, (England.) When used as green forage, they are cut after the pods are formed, but long before the seeds are ripe. Being in the class of crops not al-

lowed to mature their seeds, they are not exhausting to the soil. They are considered as restorative crops, from the quantity of manure which the consumption of them affords. They are exceedingly nutritious, and supply a larger quantity of food for a limited period, than almost any other forage crop. All the animals of the farm are fond of this legume, and all thrive upon it in an eminent degree. Hogs may be fattened entirely upon it. It causes milch cows to give more butter than any other species of food, and it is employed extensively in the feeding of horses. All the English agriculturists are impressed with a high opinion of the value of tares."

Young observes, " tare crops are of such use and importance that not one tenth of the stock could be sustained without them; horses, cows, sheep and hogs are all fattened upon them; hogs are soiled upon them without any other food. This plant maintains more stock than any other plant whatever. Upon one acre Davis maintained four horses in much better condition than upon five acres of grass. Upon eight acres he has kept twelve horses and five cows for three months without any other food. No artificial food whatever is equal to this excellent plant."

" Tares cut green," Professor Thaer observes, " draw no nourishment from the soil, whatever; while made into hay they afford a fodder preferred by cattle to pea straw, and more nutritious than hay or any other herbage."

These high encomiums on this plant will, we hope, invite the attention of our farmers strongly to the subject, that experiments may be made among ourselves of their adaptation to our climate and soil; and of the expediency of introducing them among a rotation of crops in our system of husbandry, if we are so fortunate presently as to have a system.—Tares are of two kinds, Winter and Spring, but not distinguishable from the appearance of the seed. The winter tares are sowed in England in September and October, and where they are designed for soiling the sowing is continued at successive times until May. The spring tares are advised to be sowed as early in the Spring as they can be got in. A clay soil is most congenial to their growth; and any rich soil will do, provided it is not too dry. The quantity of seed to an acre is from two and a half to three and a half bushels; the latter quantity where they are to be cut for green fodder; the former where they are cultivated for their seed. It is advised to sow some grain with them, such as rye with winter tares and oats with spring tares, which serve to support them.

It is doubtful whether tares sowed in the fall would survive our severe winters. This, however, can only be determined by some actual experiment. We hope they will have a fair trial. For soiling they must be an excellent article; and I cannot but hope that the practice of soiling will prevail much more among us; especially for the quantity of most valuable manure, which under proper management may be made in this way. I ask leave here to refer to an admirable and encouraging experiment in soiling, on a small scale, in my Second Report of the Agriculture of Massachusetts, p. 69.

H. C.

(Note H.—p. 25.) Product of Sheep.

This would seem to be a large yield, but perhaps under good management, not overrated. Mr. Hubbard, an extensive wool dealer at Leeds, whose authority appears to be much relied upon, states the average of the short wooled sheep at 3 1-2 lbs. each, and the long wooled at 7 1-2 lbs. each. Mc Culloch in his tables, states the yield of the Teeswater sheep to be 9 lbs. to a fleece; the Lincoln, 10 lbs.; of the

Dishley, 8 lbs.; of the Cotswold, 9 lbs.; and of the South Downs 2 1-2 lbs., of the Cheviot 3 lbs. to a fleece. It is stated in another work that a Mr. Sellar, by dint of persevering attention to the choice of rams, the change of herbage and placing the sheep at different ages upon appropriate pasture, together with supplies of artificial food in the pinching seasons of the year, has raised the average wool of the Cheviot race to 4 and 4 1-2 lbs. per fleece.

I have known cases of as remarkable improvement here. They show emphatically how much a farmer's success depends on enterprise, care, and skill.

I ought to say, in this place, that Mr. Webster is in no respect whatever, responsible for the Notes attached to his address. With the exception of those on beans and vetches, he has not seen them. H. C.

(Note I.—p. 36.) Agricultural Statistics.

EXTRACTS FROM THE MEMORIAL OF THE COMMISSIONER OF AGRICULTURAL SURVEY TO THE LEGISLATURE OF MASSACHUSETTS, FEBRUARY 17, 1840.

The domestic industry of the State, and especially its agriculture, in its connexion with national wealth, with the comforts of every class and condition of its people, and with good morals, has claims to the most liberal encouragement and patronage of the government.

In a faithful and enlightened regard to Agriculture, Massachusetts has eminently distinguished herself among her sister states. In her endowments and annual bounties to agricultural societies, in her geological and agricultural surveys, and in her premiums offered for the production of wheat, silk, and sugar, she has made a generous provision for the encouragement of this great and useful art; and with a sound discretion has expended money, which has already given back, and is in the process of making, the most abundant returns.

It seems to your memorialist, exceedingly important that some mode should be adopted to ascertain, with as much exactness as the nature of the case admits, the actual products of agriculture within the State. True political economy differs not at all, except in the extent of its application, from true household, private, or domestic economy. The wise merchant or farmer will seek to possess himself in the most exact manner of the knowledge of his condition, his stock in trade, his income, his expenditures, his gains, or losses, and the actual results of his business. A state or political community should in like manner become acquainted with its actual condition, and especially with all the applications and results of its industry; for this is indeed the great source of its wealth, the right arm of its power, the only true foundation of its independence. It should become acquainted with its own capacities and powers; and learn how far they are called out, how they are applied, how they may be best applied, and to what extent she may rely upon them; and especially how far she may rely upon them for the supply of her necessary wants, and to what extent and in what way they may be made the foundation of social wealth and independence.

Every part of the civilized world seems to have waked up to the importance and value of statistical information; and no knowledge is likely to lead to more useful practical results. The smaller the community, the more directly practical and efficient is such knowledge. The statistical returns of the mechanical and manufac-

turing industry of the Commonwealth, obtained and published three years since by direction of the government, is universally admitted to be one of the most valuable documents ever published by the State or in the State. It has exalted the credit of the Commonwealth in the highest degree at home and abroad; and given her the command of capital and resources for use and improvement, which otherwise, with her limited territory and disdained soil, she could hardly have maintained. It has inspired in her own citizens, an honest pride, a self-respect, a feeling of self-dependence, which naturally grow in an attachment to home, and quench the desire of emigration. More especially, and above all, it has revealed and established, even in the most humble and the most sceptical minds, the great truth, that in honest, enlightened, well-directed, persevering, and productive industry, there are to be found a means of wealth, an instrument of power, a source of comfort, a security to morals, and a ground of independence, which the underlaying of her whole territory with mines of gold would not supply.

What has been done for manufacturing and mechanical industry, your memorialist is anxious should be extended to every other branch of productive labor, and more especially to agriculture. It will not be difficult or expensive to accomplish it. It may reveal in many respects a mortifying deficiency and a blameable neglect. The knowledge of the facts in such case will more than any thing else conduce to amendment. It may disclose to our gratification and surprise more favorable results than we apprehend. Such a case would stimulate ambition, and encourage to greater exertion. In any event an accurate ascertainment of our condition and products in this matter, would have a powerful and favorable influence upon our agriculture; and would prove a most important step in the way of improvement.

It is believed, as already stated, by some highly intelligent and observing men, that taking the whole territory into view, Massachusetts does not produce half a peck of Indian corn to an acre. If this fact could be ascertained, in an authentic form, it would, your memorialist believes, at once awaken the farmers to the great value of this crop, and the losses suffered by the neglect of its cultivation. It would at once occur to them that it could not be difficult for Massachusetts to raise at least one bushel of corn to the acre, or as many bushels of corn as she has acres in her territory. To say nothing of the fodder, and the means consequently of increasing her live stock, this would be the actual creation, out of her soil, of four million, five hundred thousand bushels of Indian corn. In such case we may consider half the product in grain as the clear product of the crop. What an advantage to our habits, our comfort, and our power of usefulness, if then, as clear gain beyond the cost of labor and cultivation, we could produce annually in the State two million bushels of Indian corn. What mine of gold in any country would be comparable to this? But this is only one article of agricultural produce. The knowledge of other products would be equally and similarly useful.